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# Foreign AGRICULTURE

REVIEW OF FOREIGN FARM POLICY, PRODUCTION, AND TRADE

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# SWEDEN ADJUSTS ITS AGRICULTURE TO WAR CONDITIONS. . . . .

By Ewert Aberg*

*During the 20 years following the World War Sweden greatly increased its agricultural production and the degree of its self-sufficiency. Natural limitations, however, force Sweden to depend upon imports for some products, which now have been almost entirely cut off by the war that surrounds it. This article reviews briefly the effect of the present war on Sweden's agriculture and the measures that have been adopted to adjust the country to war conditions.*

Although Sweden is the fourth largest country in Europe (excluding the Soviet Union) - about the size and shape of the State of California - its agricultural production is limited by the roughness of the land and the short growing season. The southern part of the country is about as far north as Alaska or Hudson Bay, and the northern part stretches well beyond the Arctic Circle. Only a relatively small part of the area can be used for agricultural purposes. Intensive agriculture is possible only in the south, and even there the seasons are too short for such crops as corn. In the central and northern part only pasture, hay, and such crops as barley and potatoes can be grown.

Sweden is now the only country in northern Europe that is not directly involved in the present war. It is completely surrounded, however, by warring and occupied countries, with the result that foreign trade with overseas countries is almost entirely cut off. Not only have the country's principal exports - forest products - been greatly reduced, but imports of the vitally needed feed, fats and oils, fertilizer, petroleum, etc., have also been greatly reduced.

Far-reaching developments in the country's agriculture since the World War have placed Sweden in a much better position to withstand war conditions than it was in 1914. A more detailed description of Swedish agriculture and its development during this period has already been presented.[1] Domestic production of bread grain increased 43 percent by 1937-39 as compared with average production in 1909-13. Feed-grain production increased 14 percent, potatoes 19 percent, and sugar beets 100 percent.

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[*] The author is a member of the staff of the Agricultural College of Sweden at Uppsala and is now pursuing advanced studies in the United States.

[1] MINNEMAN, P. G. SWEDEN'S AGRICULTURE AND THE WAR. Foreign Agr. 4: 577-616, illus. 1940.

Livestock production also increased greatly. Butter, pork, and eggs were all on an export basis during the period 1937-39. Bread grains, potatoes, sugar, beef, and cheese were all about sufficient for consumption requirements. Of the feed grain about 10 percent still had to be imported to sustain the expanded livestock industry. The principal deficiencies now are concentrated feed for dairy cattle, fats and oils for the manufacture of margarine, commercial fertilizer, and such exotic products as coffee, cacao, tobacco, and tropical fruits and fibers. In addition, Sweden normally relies on imports of petroleum to operate tractors, trucks, and automobiles.

Besides the loss of imports as a result of the war, Swedish agriculture suffered another severe blow in 1940 and 1941 due to bad weather for crops, especially for grain, hay, and pasture. Grain crops in 1940 were about 31 percent smaller than the average production obtained in 1937-39, and the 1941 crop is estimated to be 41 percent smaller than the average (table 1). On the basis of the latest estimate, the 1941 grain crop is the smallest since the very small harvest of 1917. The hay crop was cut even more sharply, by 58 percent, in 1941. For the root crops, especially potatoes, weather conditions were much more favorable and production was increased.

TABLE 1.–*Production of grain, potatoes, and hay and new imports of grain during specified periods*

| PRODUCT | AVERAGE 1909-13 | AVERAGE 1937-39 | 1940 | 1941 (ESTIMATED) | 1941 AS PERCENTAGE OF 1937-39 |
|---|---|---|---|---|---|
| | *1,000 short tons* | *1,000 short tons* | *1,000 short tons* | *1,000 short tons* | *Percent* |
| Bread grain: | | | | | |
| Production | 918 | 1,311 | 757 | 685 | 52 |
| Net imports | 341 | 24 | 102 | 1 | 4 |
| Total | 1,259 | 1,335 | 859 | 686 | 51 |
| Feed grain: | | | | | |
| Production | 2,090 | 2,377 | 1,769 | 1,501 | 63 |
| Net imports | 75 | 220 | 96 | 10 | 5 |
| Total | 2,165 | 2,597 | 1,865 | 1,511 | 58 |
| Total grain: | | | | | |
| Production | 3,008 | 3,688 | 2,526 | 2,186 | 59 |
| Net imports | 416 | 244 | 198 | 11 | 5 |
| Total | 3,424 | 3,932 | 2,724 | 2,197 | 56 |
| Hay production | 5,000 | 6,290 | 3,740 | 2,630 | 42 |
| Potato production | 1,727 | 2,060 | 2,572 | – | – |

The seriousness of the grain situation is apparent when one compares the recent pre-war grain production of 3,688,000 short tons with the estimated production for 1941 of 2,186,000 tons. About 244,000 tons of grain were formerly imported. The total supply available from the 1941 crop plus imports therefore amounted to only about 56 percent of that available in 1937-39.

The loss of imports of high-protein feed (oil-meal cake) and of feed grain, together with the extremely bad crops in 1940 and 1941, has forced the adoption of emergency measures and a decline in livestock production. The shortage of imported vegetable oils greatly reduces the use of margarine, and this, in turn, results in increased demand for butter to replace margarine. Exports of livestock products consequently have been almost stopped and domestic consumption has had to be reduced.

## WARTIME ADJUSTMENTS OF AGRICULTURE

The following are some of the most important measures that have been adopted to adjust Swedish agriculture to emergency conditions:

(1) Survey of supplies and building up of stocks before the war;
(2) Rationing to reduce the quantities consumed;
(3) Changes in crop production and methods;
(4) Use of substitute feeds;
(5) Use of substitute fuel and power;
(6) Organization of farm labor.

### Survey of Supplies and Building up of Stocks

In the fall of 1938, when it seemed possible that Sweden would be faced with isolation due to war, the Government appointed a committee to investigate the food situation as a basis for planning adjustments in agricultural production and consumption. A comprehensive survey was made of Sweden's resources and requirements and of the supplies available in storage. Beginning in 1938 and until the war broke out in 1939, the stocks of such vital products as bread grains, oil cake, fertilizers, fuel, and oil were materially increased. Accumulation of grain stocks was facilitated by unusually good crops in 1938 and 1939. These reserve supplies were soon needed and proved to be particularly valuable in supplementing the unusually bad harvests of the succeeding years. Some fertilizer was stored in warehouses and some was stored in the soil through increased application, in keeping with the committee's recommendation. One of the most valuable results of this far-sighted planning - in addition to the temporary building up of stocks - has been the preparation of sound basic information regarding the country's production and consumption requirements. This has been the basis for establishing the rationing system.

### Rationing

A system of rationing was introduced early, not only to reduce the consumption of certain products but also to avoid hoarding and to insure a more orderly and equitable distribution of available supplies. Two products used in agricultural production, concentrate feed and fertilizer, are rationed. The use of superphosphate fertilizer for the 1939-40 crop was limited to 80 percent, and in 1940-41 to 60 percent, of the amount used in 1938-39. This reduction, however, is not likely to affect yields materially in the near future because a considerable portion of previous applications is still available in the soil. The only other fertilizer being rationed is sodium nitrate from Chile, which can no longer be imported. Storage supplies in the country are available only for use by sugar beet growers. Concentrate feeds, such as oil cake and corn, have been rationed at 40 percent of the quantities used in 1938.

The list of rationed foods includes such products as flour, sugar, fat, meat, cheese, eggs, dried fruit, and coffee. In addition to rationing the quantities used for direct consumption, several other control measures have been applied. These include restriction on the use of grain for brewing and distilling, compulsory addition of barley to wheat and rye in flour, limitation on the maximum percentage of butterfat permitted in fluid milk sold for direct consumption and in the manufacture of cheese, and limitation on the use of fats and oils in the manufacture of margarine.

## Changes in Crop Production and Methods

Crop yields had already been greatly increased before the present war through such measures as increased application of fertilizer, improved varieties, and improved cultural methods. The possibility of immediate further increase in production through these measures is small. Important changes, however, are being made in the kinds of crops grown and in the use of land with a view to increasing the production of those crops that have the highest value for direct human consumption or for feeding livestock. These include wheat, rye, sugar beets, potatoes, and high-yielding root crops for feed, such as turnips and swedes. The production of legumes is encouraged

FIGURE 1.—Poppies grown on the experimental farm at Flahult.

as a source of both feed and nitrogen for the soil. On the other hand, the acreage in barley, oats, old hay meadows, and idle land is reduced. Meadows are plowed up earlier - at the end of 2 years rather than 3 or 4 as has been customary in some regions.

It is hoped to relieve the fat and oil deficiency by increased plantings of such oilseed crops as soybeans, poppies, seed flax, rape, and mustard. Extensive experimental plantings of test varieties are being made to find strains that will produce satisfactory results under the cool weather and short growing season of Sweden. Seed was available in 1941 for planting about 37,000 acres of the above oilseed crops.

Among the newly introduced plants the sweet lupine should also be mentioned. This plant is grown for its high protein content and because it is adapted for planting on poor sandy soils not suitable for other crops. The experiments in 1940 yielded 5,280 pounds of dry feed, with a protein yield of 528 pounds, per acre. If similar results can be achieved on a larger scale, this crop may find a permanent place in Sweden's agriculture.

FIGURE 2.—Harvest of reeds in middle Sweden. (Courtesy of the American Swedish News Exchange, Inc., New York.)

A recommendation to increase the feed value of hay - particularly alfalfa and clover - is to cut the hay earlier than has been the practice. When the plant is cut during the early flowering stage, the protein content is highest and only 4.8 pounds of the resulting hay are necessary to equal one feed unit, whereas under the old method of cutting during the full-bloom stage 5.5 pounds are required. If this recommended procedure could be adopted by all farmers, the protein content of Sweden's total hay crop would be increased by an amount equivalent to about one-half of the protein obtained from imported oil cake and meal and imported grain. This calculation, however, is based on the assumption of ideal weather conditions for curing and is therefore hypothetical.

Drying hay by artificial means is increasing. It insures the maximum feed value by preventing damage and loss due to bad weather. Freshly cut hay can be dried with heat in about 10 minutes to a 10-percent moisture content. This hay, if made from legumes, is considered equivalent in feed value to oil cake and has a feed value about 50 percent greater than when cured under usual field conditions. Only a few of the larger farms at present are using artificial dryers, but the plentiful supply of cheap hydroelectric power may permit their extensive use.

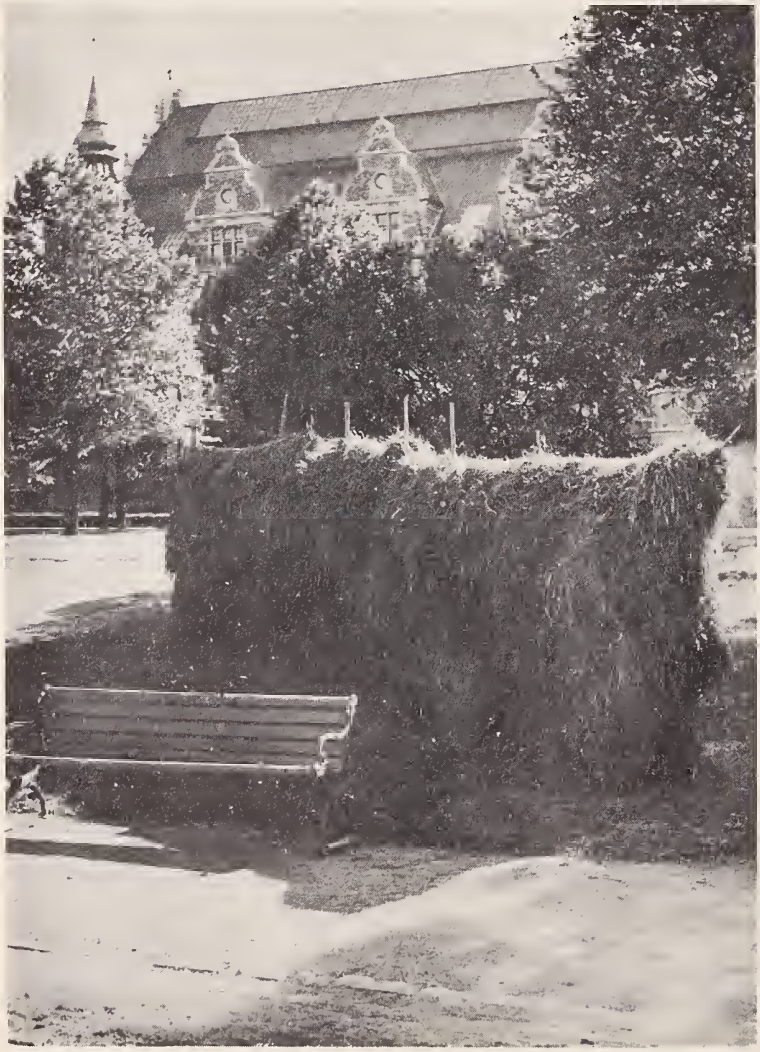


FIGURE 3.—Curing grass for hay on the lawns outside Nordiska Museet, Stockholm, July 1941. (Courtesy of the American Swedish News Exchange, Inc., New York.

## Substitute Feeds

Primarily because of the extremely low yields of grain and hay in 1940 and 1941, many farmers are forced to find substitute feeds during the winter to prevent their having to dispose of breeding stock. One of the most important of these substitute feeds is wood pulp or cellulose. According to experiment-station results, it has almost the same feeding value as oats, except that it contains no minerals or protein, which must therefore be added. Usually the wood pulp is mixed with oil cake, molasses, or skim milk and is used as feed for cattle, horses, and even hogs. It is planned that about 225,000 tons of wood pulp will be used for feed during the winter of 1941-42. One of the farmers' cooperative-union factories is now also studying the possibilities of producing a "hay" from pine needles.

With the extreme shortage of hay, every available source of feed is being utilized, including the hay from city lawns, the reeds from swampy areas, and even the leaves of trees, such as aspen, ash, and birch, where sufficient labor is available.

## Substitute Fuel and Power

Sweden has no oil wells and is dependent on imported gasoline and oil for tractors, trucks, and automobiles. Storage of import supplies of fuel for the 20,000 tractors used by Sweden's farmers has been a serious matter, especially since many of these could not be suddenly replaced by horses, which are needed by the army. In order to be able to operate tractors, trucks, and automobiles many people have converted their machines for operation with gas generated from charcoal or wood. The rapid increase in the use of such gas generators since the war started is shown by the following tabulation:

| | *Number in use* |
|---|---|
| 1940 - April | 1,500 |
| - November | 17,000 |
| 1941 - January | 20,000 |
| - May | 50,000 |
| - August | 100,000 |

Gas generators at first were placed on small trailers drawn behind the machine but later were fitted into the rear baggage compartment of automobiles or onto the sides of tractors and trucks. The basic principle is to heat wood or charcoal in a stovelike generator, cool and filter the resulting gas, and mix it with the proper

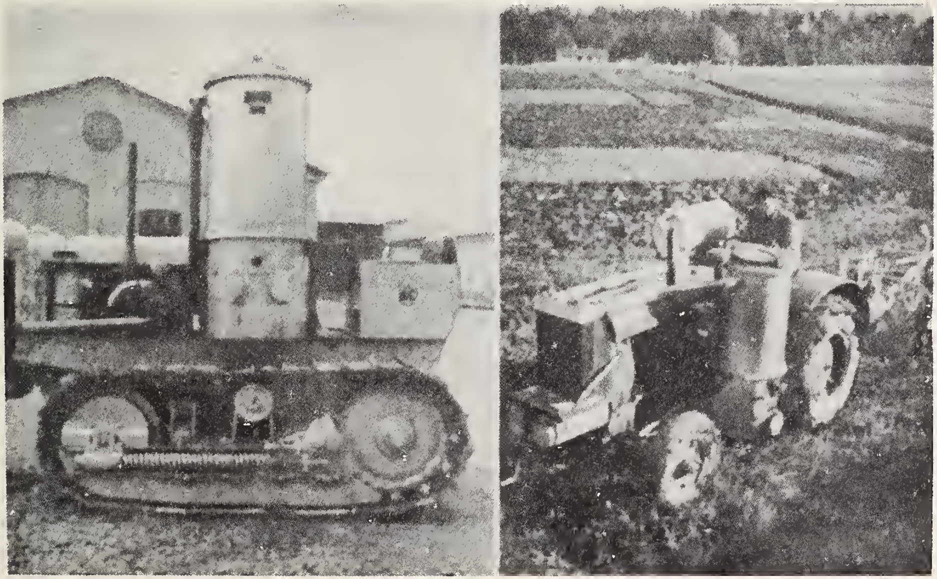


FIGURE 4.—Two tractors equipped with generators for wood.

amount of air before passing it into the motor. Such gas from charcoal or wood has a lower power value than gas from gasoline or kerosene, and as a rule the motor develops only 65 or 75 percent of its normal power. Nevertheless, wood is plentiful and cheap, and Swedish farmers are well satisfied to be able to use their tractors and trucks at all and are not complaining about the loss of power.

Electric power is also very important during this emergency period. Most of the electricity is obtained from water power. In 1938 electric power was available to about 78 percent of the country, and it was to be increased to an estimated 95 percent by the end of 1941.

### Organization of Farm Labor

More than one-half of the tillable land is in farms of less than 50 acres, and about 80 percent of Sweden's farms are operated by the owners. Consequently, production depends primarily on hand labor, since the extensive use of machinery is possible only on the larger farms. When one or two members of a family are taken away from the farm for military service, the farm work is frequently severely handicapped. In order to minimize the labor deficiency, a cooperative movement has been organized to form so-called labor units, of which there are now about 75,000 in the country. In these organizations the laborers from a certain number of farms work together as a unit under the leadership of one man. The results have been that the available supply of labor is used more efficiently and that the available horses and machinery are more fully utilized.

In certain cases the labor deficiency has been so great that it has not been possible to take care of the shortage by the above labor-unit method. In such cases young women have been organized to help with farm as well as other work during emergency periods. The Prepardeness Committee of Women's Organization trains reserve agricultural workers in camps and on farms, where they learn to operate tractors, to milk cows, etc. Many of the women are college and university students.

## EFFECT ON SWEDISH AGRICULTURE

It is impossible to determine accurately what effect the war or the emergency measures have had on crop production because the extremely unfavorable weather conditions have been primarily responsible for low yields in 1940 and 1941 and have overshadowed other factors. It is evident, however, that the earlier measures taken by the Swedish Government to build up large reserve stocks of grain and other feeds have been very important in alleviating the distress that occurred as a result of the recent crop failures. Supplies of grain have been sufficient for food, and farmers have been able to keep most of their breeding stock.

The effects on livestock are more readily apparent. The shortage of feed has been primarily responsible to date for an approximately 20-percent reduction in the number of cattle and a much greater reduction in the number of hogs. Meat supplies were well maintained during the first year of the war as a result of the necessity of slaughtering a larger number of cattle to conserve feed. In 1941 the increased slaughter of cattle was still providing an ample supply of beef, but hog slaughter was being rapidly reduced, as is shown in table 2.

TABLE 2.-*Dairy production in commercial creameries and commercial livestock slaughter, 1938-41*

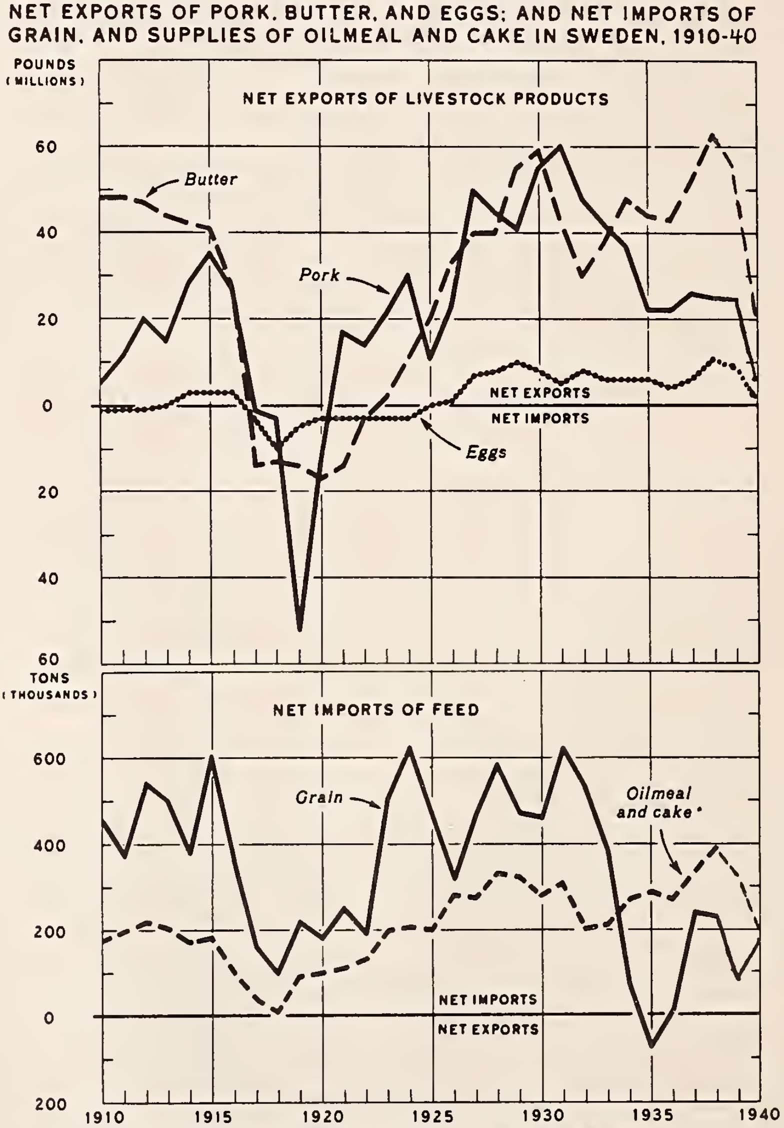
| ITEM | 1938 | 1939 | 1940 | 1941[1] | 1941 AS PERCENTAGE OF 1939 |
|---|---|---|---|---|---|
| | | | | | *Percent* |
| Dairy (creamery) production: | | | | | |
| Milk delivered ......... million pounds | 6,684 | 7,068 | 6,592 | 5,750 | 81 |
| Butter made .................. do ...... | 176 | 184 | 178 | 176 | 96 |
| Cheese made .................. do ...... | 81 | 96 | 78 | 52 | 54 |
| Domestic consumption: | | | | | |
| Butter (creamery) sales ...... do ...... | 114 | 120 | 163 | 170 | 142 |
| Margarine sales .............. do ...... | 129 | 131 | 86 | 56 | 43 |
| Commercial slaughter: | | | | | |
| Hogs ...................... thousands | 1,440 | 1,578 | 1,461 | 1,050 | 67 |
| Cattle ........................ do .... | 370 | 394 | 538 | 555 | 141 |
| Calves ........................ do .... | 934 | 981 | 1,018 | 920 | 94 |

[1] Estimates for 1941, prepared by the Office of Foreign Agriculture Relations, based on data for first 9 months for dairy products and first 8 months for slaughter.

Dairy production as measured by the quantity of milk delivered to commercial creameries and the quantities of butter and cheese made in these creameries declined about 20 percent in 1941 as compared with 1939. The shortage of fats due to the lack of imports has been responsible for placing the principal stress on maintaining butter production. The limitation of the butterfat content in retail milk and in cheese has made more butterfat available for the manufacture of butter, total creamery production of which has declined only slightly, whereas the production of cheese has been cut almost in half. Formerly about one-half of the butter was exported. These exports have now been practically stopped. The consumption of margarine, which formerly was about as large as that of butter, has declined to less than one-half the former level as a result of the storage of imported vegetable oils. This margarine shortage has forced butter consumption to increase at least 40 percent. The total consumption of fats and oils in the form of creamery butter and margarine amounted to 251 million pounds in 1939, and it is estimated that the consumption of these products in 1941 may amount to about 226 million pounds. It must be pointed out, however, that less fat is being consumed in milk, cheese, and lard.

No detailed information is available regarding the extent to which egg production has declined, but reports indicate that it has dropped sharply. Sweden's total egg production prior to the war was estimated at about 800 million eggs, of which by 1938 Sweden was able to export about 100 million. Production had declined to such an extent, however, that it is believed imports by 1941 exceeded exports and a sharp reduction in consumption was necessary. On September 24, 1941, eggs were added to the list of rationed products and maximum prices were fixed.

The Swedish people are fully aware of the seriousness of the situation and are working together to share the responsibility of what has to be done to make the necessary adjustments. They know that the products from Swedish farms during the war are to be used almost entirely by the Swedish people. The farmers are willing to bear a share of the increased expenses of production but demand that the burden of the increased costs be shared, through higher prices, by the entire population.



*NET SUPPLY OF OILMEAL AND CAKE FROM IMPORTS AND DOMESTIC CRUSHING

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FIGURE 5.—Net exports of Swedish livestock products and net imports of feed, 1910 to 1940.

Prices of farm products have advanced considerably since the war started (table 3). In the case of most farm products the Government has found it necessary to regulate or fix prices in order to prevent the reduced supplies from causing prices to rise too rapidly and to prevent the prices of certain products getting too much out of line with others. By August 1941 prices of wheat and rye had increased 50 to 60 percent above those in August 1939 immediately preceding the outbreak of the war. Prices of cattle, hogs, meat, and milk used for manufacturing increased from 40 to 45 percent, but prices of margarine and eggs rose much more sharply. Food costs for the country as a whole had increased 31 percent.

TABLE 3.–*Prices per kilogram of selected products, annual average 1935 and August 1939-41*[1]

| ITEM | 1935 | AUGUST | | | INCREASE AUGUST 1941 OVER AUGUST 1939 |
|---|---|---|---|---|---|
| | | 1939 | 1940 | 1941 | |
| | *Kronor* | *Kronor* | *Kronor* | *Kronor* | *Percent* |
| Wheat | 16.69 | 16.72 | 24.25 | 25.00 | 50 |
| Rye | 15.59 | 15.81 | 24.16 | 25.00 | 58 |
| Barley | 13.13 | [2] 14.38 | [2] 25.02 | 23.00 | 60 |
| Oats | 12.15 | [2] 13.86 | [2] 23.27 | 21.50 | 55 |
| Potatoes | 8.28 | 8.77 | 13.30 | 23.00 | 157 |
| Sugar | 36.00 | 38.00 | 44.50 | 47.50 | 25 |
| Cattle | 61.00 | 70.00 | 72.00 | 96.00 | 37 |
| Hogs | 87.00 | 106.00 | 123.00 | 153.00 | 44 |
| Eggs | 114.00 | 135.00 | 149.00 | 225.00 | 66 |
| Milk: | | | | | |
| For consumption | 21.00 | 25.00 | 27.00 | 30.00 | 20 |
| For manufacturing | 8.90 | 11.30 | 14.10 | 16.30 | 40 |
| Butter, domestic | 223.00 | 300.00 | 325.00 | 355.00 | 18 |
| Margarine | 135.00 | 170.00 | – | 300.00 | 76 |
| | *Index* | *Index* | *Index* | *Index* | |
| Food costs (July 1914=100) | 129 | 147 | 170 | 192 | 31 |
| Cost of living (September 1931=100) | 101 | 107 | 124 | 143 | 34 |
| Industrial production (1935=100) | 100 | 110 | 149 | 173 | 57 |

[1] The kronor is equivalent, roughly, to 24 cents.

[2] Prices for September.

[Sweden] Kommerskollegium, Kommersiella Meddelanden, V. 28, No. 9, 1941.

Agricultural production, particularly that of livestock products, will probably have to be reduced further as existing supplies of grain and other feed are exhausted and as import supplies become more and more difficult to obtain. Nevertheless, Swedish farms should be able to supply sufficient food to maintain a fairly satisfactory level of consumption if weather conditions permit more normal crop production than the extremely poor crops of 1940 and 1941.

The farsighted measures adopted by the Government before the war and since, such as building up reserve stocks, rationing supplies, and controlling prices, together with the emergency adjustments such as those discussed in this article, have done much to conserve the country's resources and to assure equitable distribution of food supplies during the emergency.

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# WARTIME AGRICULTURE AND POST-WAR OBJECTIVES . . . . .

By Montell Ogdon*

*Important developments are taking place in world agriculture with respect to patterns and methods of production. These developments may bring about a period of chaos for producers and a lower standard of living for both producers and consumers if an international program is not worked out for the readjustment of production to meet a higher standard of living in the post-war period. Post-war agricultural adjustment will be in some respects more difficult than the wartime problem of increasing production of the most essential commodities. Today, farmers are stimulated by patriotic motives and by governmental assistance. Prices to encourage production are guaranteed by governments. The post-war problem will be more complicated in that production to meet peacetime needs will require not only an ample supply of essential commodities but an increased civilian consumption and a reorientation of production so that farmers will not again produce unwanted surpluses.*

Factors now affecting production in most countries that must be taken into consideration in production for the export market include (1) official planning and directing of agricultural production, (2) changes in production due to new and improved technical developments, (3) changes in production capacity of the land due to exhaustion of the soil, shortage of fertilizers, or improved methods of land use, (4) production of increased quantities of certain crops due to the use of improved seed, (5) shifts in production of livestock to new types and larger areas, and (6), changes in the productive capacity of agricultural labor.

This article makes no effort to anticipate the character of the post-war export market for United States agricultural products. That market may be shaped by the factors outlined above or by others not mentioned and unforeseen. It is assumed, however, that increased world trade and a higher standard of living are primary objectives of post-war readjustment. The results of agricultural wartime-production programs suggest that the post-war objectives cannot be achieved without international planning for increased production and consumption of agricultural products.

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## GERMANY AND GERMAN-OCCUPIED COUNTRIES

### Planning and Direction of Production to Meet Wartime Objectives

Among their agricultural objectives the National Socialists aim to coordinate production on the Continent of Europe in order that Germany may have supplies of essential commodities and the remainder of the Continent may be self-sufficient with respect to agricultural products and be able to exchange their agricultural surpluses for German manufactured articles. The main effort in Germany's domestic agricultural program is to increase the production of the commodities in which there is greatest deficiency, such as oils and fats, forage crops for the production of meat and dairy products, fibers, and cereals. The Government surveys the potential productive capacity of the country and undertakes to push the production of the specific commodities that will best meet the deficiencies.

A Government commission, composed of officials of the Ministry of Agriculture, Ministry of Finance, and representatives of semipublic technical institutions, is in charge of the survey of all arable land in Germany to determine its value and possible use in the national economy. Subcommittees travel from one district to another and, with the aid of local authorities and district farming experts, analyze the soil and evaluate its prospective yielding capacity. The Government commission then determines crops that shall be grown in each area to serve the larger public interests. Local district agricultural committees administer the plan by advising farmers of the crops and methods that will be mutually advantageous to them and to the economy as a whole.

Among the agricultural products that the German Government is attempting to produce in quantities sufficient to overcome serious deficiencies are rapeseed, root crops, hemp and flax, garden vegetables, and milk. Rapeseed, which produces a high percentage of oil and also oil cake needed for cattle feed, has been given much emphasis in Germany since 1932, when the area devoted to cultivation of rape had declined to some 12,400 acres. The area reached 153,200 acres in 1938, and was extended under Government order to more than 494,000 acres in 1940. Under an expansion program that calls for still further increase in the production of oil and forage crops, planting of an extra 247,000 acres of oilseeds was ordered for the season of 1941-42.

The production of root crops is important for industrial purposes, for feed, and to fill in when the food deficiency cannot be met from other commodities. Sugar beets, for example, which are used not only for sugar but for feed and production of industrial alcohol, have received much emphasis. The German Government has tried to place the domestic production on a basis to meet entire domestic sugar requirements and also to increase production in the rest of Europe. As a result, the total gain in the sugar beet area in 1940-41 over the previous year for the whole of Europe, excluding Russia, has been estimated at 20 percent.

Besides the attention given to increased production of synthetic fibers, wool, and woolen substitutes, the area planted to vegetable fibers has been increased. Areas planted to hemp and flax in Germany and occupied countries were extended by approximately 247,000 acres in 1941. Additional encouragement has been given to increase the area devoted to sisal.

In order to maintain the production level, quotas were established as minimum goals for milk suppliers and grain growers, based on production averages over a period of several years. In certain instances when quotas were not fulfilled and an inspection by Government authorities revealed the producers at fault, the Reich Food Estate was authorized to engage managers for the farms at the farmers' expense. In some sections, officials have taken additional steps to increase egg production by the adoption of rigid marketing requirements - establishing a minimum delivery of eggs for each laying hen in the poultry raiser's possession.

The need for all types of vegetables in Germany is so great that the Government has been making an effort to fix, insofar as possible, the estimated production output of each commodity by taking a census to obtain statistical data regarding kinds of vegetables to be planted and areas to be planted. A large part of the green-vegetable crops throughout Germany and occupied territories is dried and canned in order that the utilization of vegetables may be spread over a greater part of the year.

Agricultural conversion programs have also been set up in countries under German occupation or influence. Plans are worked out in each country for planting increased areas of certain essential crops and for reduction of emphasis upon the products that are unessential or that can be produced in other areas. The adjustments now going on in Europe include increased emphasis upon the production of oilseeds, cereals, and vegetable fibers in the Danubian countries, increased production of vegetables, fruits, cereals, and forage crops and reduced production of meats and dairy products in France, Belgium, the Netherlands, and Denmark, and increased emphasis upon production of livestock in southeastern Europe and former Polish territory where forage crops can be raised on a larger scale than in Western Europe.

## Use of Improved Seed and Livestock

Strides are being made in the present war in the development of new types of plants and the adoption of improved seed and improved livestock that may eventually increase the self-sufficiency of various regions with respect to vital commodities. Development of oil-bearing seeds in Germany, as well as rubber plantations in Latin America, may be a factor in the post-war adjustment of agriculture to consumer needs.

Prior to the war Germany was a large importer of vegetable oils. Their importance in Germany's war effort has caused the Government to do everything possible to increase the yields per acre. Experiments in Germany are reported to have produced a type of rapeseed that is "winter and shatter-proof." The principal difficulties in rapeseed production have been the large amount of winter-killing in hard winters, the loss of from 15 to 20 percent of the grain in the shattering of pods, and the large amount of labor involved in harvesting in order to restrict the loss of seed. If the new varieties prove themselves in practice, German post-war imports of oils and fats may not reach their pre-war importance. Cultivation of rapeseed has been made compulsory on the larger farms in Bohemia and Moravia for the 1941-42 season, and the seed is furnished by the Government Grain Monopoly.

Further attention by German plant breeders to development of oil-bearing plants is seen in their effort to increase the oil content of various oilseeds, including soybeans, lupines, and safflower. The latter *(Carthamus tinctorius)* is a hardy thistlelike plant of Asiatic origin, which it is believed may be cultivated on soils too poor for the cultivation of rape. Experiments in Thüringen are reported to have produced surprisingly high returns per acre.

German peasants who formerly planted seed that did not produce well or that was susceptible to disease and larger growers who planted several varieties of seed are now limited to the planting of standardized types that have been tried by experimentation and approved by the Reich food officials. Productivity, immunity from disease, nutritive value, and ripening season are taken into consideration. Potato growers are officially notified in the local press of the types or varieties they may plant. Regulations published by the Commissioner for Seeds and Seed Production also specify the dates on which early and late varieties of potatoes may be placed on the market. Greater latitude is permitted those owning home gardens than large growers, but seed susceptible to canker may not be planted by anyone in large potato-producing districts.

Burley and Virginia types of tobacco have been produced successfully in Austria under encouragement of the Reich Food Estate. The Government is now trying to place tobacco production in Germany on an economic basis and to meet domestic requirements. The Minister of the Food Estate was empowered by a decree of December 28, 1939, to declare certain parts of Austria to be tobacco-growing districts and to exercise his authority for the development of production of the appropriate types of tobacco that can be grown there.

Improvement of livestock, which received a set-back in the first World War, is not being neglected in the present struggle. German livestock experts have been summoned by their Government to assist in the development of livestock breeding in eastern and southeastern Europe to meet German requirements.

German influences in development of better breeds of livestock are in evidence in Slovakia, Hungary, Poland, the Balkan countries, and Italy. An appropriation of 2½ million crowns was made in 1940 for assistance to Slovak sheep breeders. A large-scale program is under way for the development of cattle breeding in Hungary, where it is reported that 25 to 30 thousand calves will be purchased in certain cattle-raising districts. These calves will be distributed in districts where breeding is backward, a farmer paying the Government only 57 percent of the purchase price of a calf. Assistance is granted in Hungary, also, in the form of loans for the extension of horse breeding.

In order to develop the potential livestock production of German-occupied territories, particularly Poland, large numbers of livestock have been transferred from Germany proper, Austria, and Denmark. The Animal Breeding Institute of the University of Halle, well-known for its pureblood karakul sheep herd, has been given the supervision of karakul-sheep breeding in former Poland. In pursuance of the agreements that have been negotiated by Germany with some of the Balkan countries and with Italy, providing for cooperation in the development of scientific agriculture, German experts have had a good deal to say concerning methods of improving and caring for livestock. In Italy, a joint German-Italian Committee for Stock Breeding has been formally established.

## Mobilization of Agricultural Labor to Meet Shortage

Perhaps nowhere in the opposing economics of England and Germany will one find a more significant difference in the methods employed or more far-reaching possible post-war effects than in the mobilization of labor in the war-production campaign. The German technique is to organize a compulsory labor front. The fact that Germany is endeavoring to extend the method of compulsory labor to the whole of Europe and that the democratic countries realize the importance of production in the preservation of democracy makes it necessary to take note of these doctrines of compulsion and to consider their possible effect upon potential post-war production capacity and post-war standards of living.

Agricultural education in Germany has been greatly expanded and functionalized since 1933. While obviously not designed to give students the ground work of a liberal education, the regulations issued this year by the Reich Minister of Education make education as practicable as possible for rural students. The training is organized around the farm home and the actual work done on the farm. Such courses as reading, writing, and arithmetic are correlated with the agricultural courses that form the backbone of the system. Rural education, which has thus taken on the complexion of professional agricultural training, raises many questions concerning the future of German farmers and the influence that the German technique will have on education and society in Europe - perhaps even in democracies.

Milk training courses have been introduced in the Leipzig district of Germany by the Farmers' Union in an effort to obtain the maximum quantity of milk possible. Investigations showed that many hand milkers did not milk thoroughly and that the actual milk production did not begin to attain the estimated output established by the Government for an individual year. The courses are conducted by an itinerant teacher and are presented to farmers, farmers' wives, and young people lacking knowledge of the proper methods of milking. Emphasis in the course is also given to the correct techniques of feeding and care of the animals.

Mobilization of labor in Germany is based on an administrative decree of 1938, which makes each German citizen liable to be drafted for any job that the Labor Front chooses for him. The individual is also prevented from leaving a job or taking a new one without permission of the Government. Agricultural labor is supplemented en masse by soldiers returning from engagements, former farm workers or farmers' sons released from industry, workers from organized groups, and imported aliens. Statistics of the Reichsarbeiterblatt, issued in the spring of 1941, confirmed earlier estimates that over two million foreigners - war prisoners and civilians - had been impressed into agricultural and industrial service in Germany during less than 2 years of the war.[1] Foreign laborers totaling over a million, chiefly Czechs, Danes, Netherlanders, Belgians, and Frenchmen, were employed in agricultural endeavors alone. During the 1940-41 winter season a scheme to utilize further the sources of labor was worked out under the direction of the Reich in occupied Norway, which provided for some 140 labor-service camps for the Norwegian youth. Under the direction of specially trained leaders the activities of these camps will be devoted to the production of foodstuffs by increasing the yield of land under cultivation, extending the areas of cultivable land, and performing other services of a reclamation and forestation nature as an indirect aid to agricultural production.

The agricultural labor supply situation in unoccupied France for the 1941 season has been very acute because of the fact that approximately a million French agriculturists are held as war prisoners. The labor shortage necessitated measures to exempt agricultural youth from service in camps while engaged in agricultural work and to prohibit the employment of farm laborers in nonagricultural fields. Additional measures have sought to direct potential labor supplies into agriculture. For example, during 1941 a system of rural civic service was established, requiring that all unemployed and skilled laborers from 17 to 21 years of age be subject to requisition for services in agricultural programs. This measure also applies to students during holiday periods. Another law provides that all French male adults from the country, who at any time previously were engaged in agriculture, are subject to recall for service in all phases of agricultural enterprise. Rural-guidance centers have been established to receive, direct, and supervise the location and conditions of employment.[2]

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[1] OGDON, MONTELL. WARTIME POLICIES AND CONTROLS AFFECTING AGRICULTURAL TRADE. Foreign Agr. 5: 175-192. 1941. See p. 178.

German military authorities in occupied France are paying close attention to the labor problems there, and considerable numbers of urban unemployed are being transported to rural districts for work on the farms.

Civilian mobilization to fill agricultural-labor ranks has also been organized in Italy, Spain, and Rumania. In Italy the program is under the direction of the Fascist Farmers' Union. In Spain the German Labor Front operates through the National-Syndicalist Community, which offers contracts for Spanish workers to go to Germany. Workers who accept the offer are promised the same rights as German workers, payment to the workers in Germany of remuneration corresponding to the cost of living, and payment of an allowance to members of the workers' families remaining in Spain at least equal to wages payable in Spain.[3]

Perhaps no national labor service is organized along more militaristic lines than that in Rumania. The Decree of May 14, 1941, set up a National Labor Council under the head of the state and laid down the principle that "only those persons who work shall be entitled to the protection of the State." Officers in the military reserves are called up to organize working squads and labor camps. Local agricultural committees determine the number of agricultural workers required; the head of the agricultural district is responsible for the satisfaction of labor needs in his jurisdiction and informs the regional chamber of agriculture of shortages and surpluses; and the Directorate of Agricultural Mobilization issues instructions for the transfer of labor squads necessary to meet the number of workers required in addition to the local supply. Workers in labor camps are under the strict orders of reserve and noncommissioned officers in charge, and penalties of heavy fines or imprisonment from 6 months to 2 years are provided for contraventions of regulations.[4]

## Use of Machinery

Use of agricultural machinery in Germany increased more than 100 percent during the period from 1933 to 1938 because of the reduction in the cost to the farmer and of the advancement of credit for purchase of expensive types of machines. Much of this increase in machinery was due to the greater use of drag plows larger than 22 horsepower, drills, manure spreaders, various types of cultivating machines, grain harvesters, and potato cookers for preparing feed.

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[2] INTERNATIONAL LABOUR OFFICE. THE ORGANIZATION OF AGRICULTURAL LABOUR SUPPLY IN FRANCE. Internatl. Labour Rev. 44: 440-443. 1941.

[3] INTERNATIONAL LABOUR OFFICE. RECRUITING OF SPANISH WORKERS FOR GERMANY. Internatl. Labour Rev. 44: 580. 1941.

[4] INTERNATIONAL LABOUR OFFICE. LABOUR REGULATION IN RUMANIA. Internatl. Labour Rev. 44: 580-582. 1941.

An essential saving to German farmers and greater efficiency of production may come from the reduction in the types of agricultural machinery and implements manufactured in Germany. Elimination has been made of certain types of machinery found to be costly to produce or inefficient to operate. The manufacture of grain mowing machines that do not combine cutting and binding operations is prohibited. Regulations provide that newly manufactured potato planting machines must be capable of performing several functions in order to meet marketing specifications. Progress in this standardization, while slow, has already been made: the number of models of farm tractors has been reduced from 62 to 20; the number of types of plows has been reduced by about one-third; the manufacture of left-turning plows is forbidden; the number of standard types of cultivators that may be manufactured has been reduced from 24 to 8; a six-row potato planter has been made standard; and the number of types of drills has been reduced from more than 60 to 21. There has also been a standardization of many other machinery features, such as the types of harrow spikes, the types of cultivator blades, the spacing of rows, the type and location of hitching connections, and the equipment of tractors for the direct drive of machinery.[5]

In the summer of 1940 a decree was promulgated by the Reich Minister of Food and Agriculture with respect to agricultural-machinery distribution. Distribution in Germany, which is controlled by the Government, is made on the basis of the size of the farm area and the horsepower of the machine. A new tractor is obtainable only when a farmer's old one is beyond repair and with the proviso that the old tractor be relinquished to the Government to be used as scrap metal. Announcement was made last spring by the German Labor Front of the development of a small tractor, adequate for the needs of the average farmer, which is to be sold at a price within the buying range of from 4 to 6 million farmers.

German plans for the maximum mobilization and utilization of productive forces call for mechanization of agriculture in eastern and southeastern Europe. The hope is expressed in German quarters that a 50-percent increase in the yield per acre may be effected in the states of southeastern Europe by the use of German experience and modern German agricultural machinery and implements.[6] Already the market for German agricultural implements has been expanded in Hungary, Rumania, and Bulgaria. Much mechanized farm equipment has also been sent by the German Government into Polish territory. It is also hoped by German authorities that a large market for the baby tractors referred to above will be developed in Europe outside of Germany.

## UNITED KINGDOM AND BRITISH DOMINIONS

### Wartime Production in the United Kingdom

The pre-war dependence of the United Kingdom upon imports to meet domestic food requirements caused the British Government in 1939 to undertake a program for the increased production of certain particular foods, especially cereals, potatoes, milk, and vegetables. Considerable increase in cereal production was possible because of the large areas of wasteland and cultivable pasture land.

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[5] U. S. BUREAU OF FOREIGN AND DOMESTIC COMMERCE. GERMAN FARM EQUIPMENT TRADE. U. S. Bur. Foreign and Dom. Com. Indus. Ref. Serv., Pt. 6, Mach. and Equip., No. 17, [2] pp. 1941.

[6] Statement made by Dr. Walter Graevell, a director of the Reich Statistical Bureau, in the economic weekly, Deutsche Wirtschaftszeitung, No. 48, Nov. 29, 1940.

As a part of its program to increase domestic production the British Government planned three types of action, each of which is of social significance and may have a bearing upon the future of British agriculture. First, it was deemed necessary to bring additional land into cultivation. This means increased use of heavy power machinery and mechanization of production; it involves long-term investments on the part of the British farmer as well as his Government; and it increases the overhead costs of production. Altogether these spell the liklihood of long-time governmental interest in agriculture. Second, in order to have assurance of increased production it was deemed necessary to improve the lot of agricultural workers by raising their wages and providing improved housing. Third, it was deemed necessary to give the farmer assurance of a reasonable return for his products.[7]

### Plow-up and dig-for-victory campaigns[8]

A campaign was launched in September 1939 in England for the plowing up of over 2 million acres of pasture land to be planted to crops for the 1940 harvest. Owing to a number of factors, this plow-up program has been quite successful. The patriotic appeal to increase production of food is very strong; the Government has increased the prices to farmers for their products; the shortage of feedstuffs has tended to cause greater planting of grain and forage crops; the farmer is paid a subsidy of £2 for each acre plowed up, of £10 per acre planted to potatoes. The War Agricultural Committees have powers under the Defence Regulations to compel farmers to plow up their land, but since farmers have in general cooperated willingly with the committees there has been little use of the coercive powers.[9]

A program for the utilization of wastelands in Scotland was also adopted under the provisions of the Defence Regulations Acts of 1939 and 1940 and the Agriculture Miscellaneous War Provisions Act. Ireland, fearing a scarcity of imported foodstuffs for both human and animal consumption because of the shortage of transportation facilities resulting from the war, enacted legislation during 1941 requiring that at least one-fifth of the arable land (in tracts of 10 acres or more) be cultivated during the 1941 season. This action was taken as a further precautionary measure amending the Compulsory Tillage Order, which increased the cultivated area in 1940 to one-eighth, of the arable land.

The United Kingdom's small-garden-production program, known as the dig-for-victory drive, is a carry-over from the World War period, during which 1,400,000 plots in England and Wales were attained by 1918. Besides these garden plots, which were expected to reach the 1918 figure by 1941, small plots of ground in 3½ million back yards have been devoted to vegetable and fruit raising. Because the cereal-production program was so successful in the 1940-41 season and an even greater home production is expected next year, it is indicated that the principal accent on 1941-42 production will be concentrated on vegetable production.

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[7] Statement of the Parliamentary Secretary to the Ministry of Food, House of Commons, July 18, 1940.

[8] The author wishes to acknowledge the assistance of Mary E. Long, Office of Foreign Agricultural Relations, especially in preparation of the sections on plow-up campaigns, use of machinery, and mobilization of labor.

[9] MURRAY, ALTON T. FOOD PRODUCTION AND THE WAR EFFORT IN THE UNITED KINGDOM. (Report from assistant agricultural attaché, American Embassy, London, Mar. 8, 1940.)
——— BRITISH INCREASE POTATO SUBSIDY. (Report of Sept. 26, 1941.)

## Use of machinery and labor

A greatly increased demand for agricultural machinery in England resulted from the functioning of the plow-up campaign. Unused land covered with dense growths of bracken and brush is being reclaimed by the use of rollers and disks drawn by heavy tractors. The land-drainage program is also being made possible by the use of heavy power machinery. The need at the beginning was mainly for tractors and plowing equipment but during the 1940 and 1941 harvest seasons included harvesting implements.

In an effort to offset the shortages of the agricultural labor so essential to the success of the food-production program tractors are now being used by the larger vegetable growers. Small grain binders, formerly drawn by two horses, are now being drawn by tractors, and for the first time combine harvesters are being introduced in many areas. Mechanization of agriculture in England was practically impossible after the beginning of hostilities in Europe because of the conversion of industry to the making of war materials. Much of the farm machinery in use in England at the present time, therefore, has been imported from Canada and the United States. To speed the United Kingdom's food production through the utilization of greater amounts of agricultural machinery, a reserve was provided by the Government to render financial assistance to the farmer for the purchase of farm equipment.

In the United Kingdom there are agricultural-labor shortages that require governmental action to maintain levels of production. With some attention to standards of living and wage rates, the Government is endeavoring to increase farm labor's productive capacity principally by mobilization of all labor available for farm work and by raising the efficiency of the workers. In the present battle of agricultural production the problem is faced of reversing the pre-war migration of the skilled and better class of agricultural workers from farms to industrial centers. Better wages in the industrial centers have attracted small farmers and such specialized agricultural laborers as mechanics, orchard workers, and vegetable growers. The enlistments in the armed services and the migration of farm workers to munitions manufacturing centers have added to the difficulties of increasing agricultural production and have accentuated inherent weaknesses in the British farm-labor system. A deficiency of dairy workmen, for example, is noted, and the fact is recognized that wages and working conditions of milkers are unattractive. A more serious defect of the labor system has been the failure of agriculture and industry to develop personnel trained for handling skilled workmen or of directing the use of machines. With the plentiful supply of labor in the United Kingdom in the period between the two great wars, personnel development failed to keep pace with mechanical progress, and as a result the country is now hard put to meet the demands imposed by the war.

Progress has been made in supplying the agricultural-labor deficiency, which may increase British post-war productive capacity and necessitate a more social governmental policy in the post-war period. The harvesting of the 1941 British wheat crop, for example, was accomplished by methods of labor and types of cooperation that were unknown in that country prior to the present war. Though the large crop unfortunately ripened in a long period of wet weather, the grain was saved by the cooperative use of power machinery, operated day and night, and the whole-hearted aid of boys and girls, civilians and soldiers, who were formerly not engaged in agriculture.

In order to meet the British agricultural-labor problems civilian industries have been combed for persons who can do farm work, and women have been recruited to take the places of the men in industry. Female labor has also helped to supply the demand for workers in the dairying industry and in harvesting vegetable and fruit crops.

The British Government has taken three types of social action to assist labor in making the adjustments and sacrifices being demanded, namely, increased wages to meet the cost of living, assurance of employment, and better living conditions. Thus, in November the Agricultural Wages Board voted to increase the national minimum wages for regular adult farm workers from 48 shillings a week to 60 shillings a week, effective December 28, 1941. The Essential Work Order of March 5, 1941, endeavored to assure the laborer a guaranteed week and some semblance of security through requiring the employer, when no work is available in one plant, to arrange for the employee's transfer to another job, even if it is to another employer. To provide better living accommodations for the additional workers needed, the Ministry of Agriculture is building 289 hostels for agricultural workers.

The United Kingdom has been making an effort since the beginning of the war to ameliorate the shortage of industrial and agricultural supervisors through the establishment of classes for the training of both men and women for duties of a technical nature. It has been one of the principal tasks of the county war agricultural committees in England to encourage scientific agricultural methods. This task has developed a class of young technical and administrative assistants who are energetic, enthusiastic, and efficient in their work.[10]

## Production Goals in the British Dominions

Though the acreage under plow in Great Britain has been increased by some 25 percent and is still growing, the resultant increase in crops cannot make up the wartime deficiency.[11] Among the principal commodities that cannot be produced domestically in ample quantities are bacon and dairy and poultry products, formerly imported in large part from the Netherlands and Denmark. The United Kingdom is acquiring from British Dominions and possessions as much of the necessary imports as they can supply. Large quantities of wool, butter, and cheese are obtained from New Zealand, Australia, Canada, and South Africa. Meat and cereals are imported from the Dominions, as well as other countries. In order to meet the demands of the mother country for dairy and meat products, certain adjustments have been necessary in the agricultural economy of the Dominions. The Canadian Government has found it necessary to discourage the production of wheat, of which there was an export surplus that could not be marketed, and to encourage the production of forage crops that would stimulate milk, cheese, and meat production.

Programs providing for indreased production of meat, milk, and cheese are also operative in Australia, New Zealand, and the Union of South Africa. In New Zealand, for example, a Primary Industries Controller was appointed with power to direct, control, prohibit, or regulate in any way he saw fit "the production, processing, manufacturing, packing, freezing, chilling, storage, and utilization of any primary product, and to require the production, &c., of any primary product."[12] Production goals in New Zealand for 1940-41, were announced as follows:

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[10] For an appraisal of the work done by these experts, see THE FARMERS WEEKLY. THE EDITOR'S DIARY: NEW LEGION. Farmers Weekly [London] 40 (10): 19. Sept. 5, 1941.

[11] WICKARD, CLAUDE R. STATEMENTS OF HON. CLAUDE R. WICKARD, SECREATRY OF AGRICULTURE... *In* Second Supplemental National Defense Appropriation Bill for 1942, Hearings, Subcom. of Com. on Appropriations, 77th Cong., 1st sess., Pt. 1, Defense Aid-Lend Lease, pp. 57-117. 1941. (See p. 59.)

> "(1) Butter-production to be maintained at the level of the previous season;
> (2) Cheese-production to be increased by 15,000 tons;
> (3) Pig-meat production to be increased by 10,000 tons;
> (4) An increase in beef-production; and
> (5) Mutton and lamb production to be maintained at the previous season's level."[12]

## WARTIME PRODUCTION GOALS IN THE UNITED STATES

The agricultural policy of the United States since September 1939 has been fully discussed in reports[13] and speeches[14] of the Secretary of Agriculture. It may be noted here, however, that the wartime production program of the Department has been worked out with a view to the fulfillment of four big objectives. (1) An immediate objective is to produce the essential agricultural commodities called for in the military defense of the country. (2) At the same time, it is the purpose of the Department to encourage the production of adequate supplies of food and other agricultural commodities essential to the maintenance of the health and well-being of the entire population of the United States in times of either war or peace. (3) Another objective is to supply the wartime deficiencies of friendly countries. (4) Finally, it is the view of the Department that the wartime demands upon agriculture necessitate the strengthening of the machinery for conservation of the soil and maintenance of an efficient agricultural industry. Farmers are thus called upon to produce what is needed for military use and civilian welfare. The program does not involve a sacrifice of the principles involved in the agricultural conservation and adjustment programs, but is a continued application of the economic principle that production should be adjusted to meet needs and changing conditions.

In the summer of 1941, the Department of Agriculture in cooperation with other defense agencies made a survey of the 1942 needs for agricultural products. The survey included our own civilian and military needs and, as a part of our defense, supplies of certain foods vital for defense in the United Kingdom. In order to meet these needs for protective foods in the United States and Britain, Secretary Wickard announced on September 8, 1941, production goals for American Agriculture in 1942.

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[12] NEW ZEALAND CENSUS AND STATISTICS DEPARTMENT. WAR MEASURES AFFECTING PRIMARY PRODUCTION. New Zeal. Off. Yearbook 49: 370-371. 1941.

[13] WALLACE, HENRY A. REPORT OF THE SECRETARY OF AGRICULTURE 1939. 169 pp. Washington, D. C. 1939.

——— REPORT OF THE SECRETARY OF AGRICULTURE 1940. 184 pp. Washington, D. C. 1940.

[14] WICKARD, CLAUDE R. AGRICULTURAL PRODUCTION GOALS FOR 1942. Speech delivered on the National Farm and Home Hour, San Francisco, Calif., Sept. 8, 1941. 8 pp. [Mimeographed.]

——— THE JOB OF NORTHEASTERN AGRICULTURE IN NATIONAL DEFENSE. Speech delivered at conference of farm leaders and Government agricultural workers of Northeastern States, New York, Sept. 24, 1941. 15 pp. [Mimeographed.]

——— FOOD FOR FREEDOM IN 1942. Radio address, Washington, D. C., Oct. 15, 1941. 6 pp. [Mimeographed]

——— OUR FOOD PRODUCTION PROGRAM. National Radio Forum address, Washington, D. C., Nov. 3, 1941. 10 pp. [Mimeographed.]

——— THE FARMERS' PART IN MAKING THE AMERICA OF THE FUTURE. Speech delivered before the National Grange, Worcester, Mass., Nov. 13, 1941. 9 pp. [Mimeographed.]

——— THE FARM FRONT. Speech delivered at Ann. Conv. of Farmers Educational and Cooperative Union of America, Topeka, Kans., Nov. 18, 1941. 10 pp. [Mimeographed.]

——— THE TASK AHEAD. Speech delivered on the National Farm and Home Hour, Washington, D. C., Dec. 9, 1941. 5 pp. [Mimeographed.]

The goals call for reductions in some crops, including wheat, cotton, and tobacco, of which we have large supplies on hand. To produce the necessary quantities of protective foods the goals call for the production of 24.2 billion pounds of beef, pork, veal, lamb, mutton, and chicken, an increase of about 10½ percent over 1941; the production of 125 billion pounds of milk, 7 percent over 1941; the production of 4 billion dozen eggs, about 10 percent above 1941; and production of vegetables other than potatoes considerably above most former years.

Though the commodity goals as announced for 1942 may in some instances need to be changed because of additional military developments, it may be said generally that the increased wartime production of protective foods, such as eggs, meat, butter, and vegetables, will be needed by civilians in the post-war period if we are to reach the post-war objectives of improved standards of living.

## POSSIBLE EFFECTS OF THE WAR ON AGRICULTURE

Obviously, the welfare of agricultural producers, and various phases of the national economy, in the post-war period will be dependent upon (1) the condition of the land, (2) the efficiency of production methods, and (3) the market for commodities produced. It would therefore be well, before taking up the subject of post-war adjustment, to note some of the problems created by these unpredictable factors.

### Effects on Land and Soil

History indicates that one of the most disastrous effects of war is the exploitation of agricultural lands. If there is a deficiency in the supply of labor or fertilizers, farmers find it impossible to give the attention to their land that proper conservation practices demand. If there are extraordinary wartime demands and high prices for particular commodities, such as wheat or cotton, the farmer is very likely to devote his efforts to the production of a single cash crop.

Agricultural officials in belligerent countries are seemingly well aware of the tendency toward soil depletion and declining yields per acre as war progresses. Governmental action to minimize these effects is to be found in the continuation during the war of programs for land and soil improvement. The greatest efforts along this line are probably being made by Germany because of the shortage of phosphates, which cannot be supplied within Europe. Germany is also extending the program for soil improvement to other areas in Europe that have been backward in these respects.

An effort is also being made to enable farmers to continue their practices of crop diversification and rotation in the United Kingdom, the British Dominions, and the United States. In Canada and the United States agricultural officials advocate increased diversification. As pointed out by the Arkansas Farmer,[15] the goals set by Secretary Wickard offer some real opportunities for farmers to add diversified crops to their operations. In Arkansas, for example, the oat acreage will be increased, the peanut acreage will be doubled, and the livestock, dairy, and poultry production goals will be boosted.

[15] MORRIS, GEORGE. IN WASHINGTON CORRIDORS. Ark. Farmer 43 (10): 11. 1941.

It would appear, in the last analysis, that the condition of the land in any particular country at the end of the war will depend upon the length and exhaustiveness of the war. As a war creates increased demands on transportation, labor, and materials, it becomes more difficult to maintain sound land-conservation practices.[16]

## Effects of Production Aids

As a result of the experience in uses of modern production techniques to meet wartime objectives it would appear possible that agriculture in Europe - after reconstruction - may be more scientific, efficient, and productive than it was prior to the war. Governments have extended technical assistance to producers that may have beneficial effects, similar to those of the agricultural experimentation and demonstration work in the United States.

This wartime experience would be as valuable in the stimulation of production to meet post-war objectives of higher nutritional and living standards as it has been in the war to meet military needs. If plans are not worked out to assure increased consumption of agricultural products, any advancements that are made in production efficiency may have the effect of aggravating the old problem of overproduction.

## Effects of Production Controls

Governmental direction of production to meet wartime objectives may have a vital bearing on post-war international economic problems besides the substantive result that production programs may have on the domestic patterns of agricultural production and agricultural imports. Readjustment of agriculture to sound peacetime economy may be either obstructed or facilitated by the administrative use that is made of the wartime agricultural controls.

The control systems that governments have established over production may be utilized after the war as administrative techniques either for carrying out nationalistic programs of self-sufficiency or for cooperating with other nations. If these controls are utilized as instruments of economic warfare to perpetuate the direction of production to meet national needs, without regard to their effects upon other nations or on their own people, they may obstruct international trade and hold down the standards of living. If governments maintain uneconomic production of agricultural commodities that are being produced economically and plentifully elsewhere, they will have to retain import restrictions to protect their domestic industries, and consumers will not receive the benefits of relatively free trade. Other countries will not be able to sell their products and will be forced to take artificial methods to support uneconomic production in their own respective economies. This would be similar to the type of economic warfare that preceded the present war. On the other hand, if governments change their objectives to peacetime goals, they may use these controls for raising the standard of living of their population. If they will agree with other countries to accept certain quantities of imports necessary to meet domestic needs, they may be able to dispose of all the produce of their industries, to increase the efficiency of their production, and to make goods available to meet the needs of their people.

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[16] MITRANY, DAVID. THE FOUR STAGES OF ECONOMIC EXHAUSTION. *In his* The Effect of the War in Southeastern Europe, pp. 157-162. New Haven and London. 1936.

GREBLER, LEO, and WINKLER, WILHELM. THE EXHAUSTION OF PHYSICAL AND FINANCIAL RESOURCES: AGRICULTURE. *In their* The Cost of the World War to Germany and to Austria-Hungary, pp. 83-85. New Haven and London. 1940.

## POST-WAR INTERNATIONAL ADJUSTMENT OF PRODUCTION

In planning post-war production either the farmer, or his government acting in his behalf, must take into consideration the effects of wartime production controls upon the demand for his commodities. What effect will the conversion programs carried out to meet wartime objectives have upon the post-war patterns of production? How long will it take Europe to obtain the necessary fertilizers to rebuild the soil? What effect will the lessons in land improvement have upon post-war production capacity? How much of the new production areas obtained through the plow-up and reclamation programs will be retained in production after the war? Will fewer farm workers be able to produce larger quantities of products through the use of power machinery? Will the use of improved seed, improved livestock, and substitutes greatly increase the self-sufficiency of European countries with respect to certain commodities? Will the experience in technical and scientific supervision of production increase the efficiency and standards of living of agricultural producers? These questions must be weighed and taken into consideration in preparing plans for post-war agricultural adjustment and reconstruction.

### Problem of Post-War Export Markets

It will not be easy to determine the import demands of foreign nations in the post-war period, for it would appear that post-war patterns of production will depend upon the policies of governments in controlling production as well as upon the techniques of production.

Because of the increased acreage being devoted to wheat, rye, potatoes, and oilseeds on the Continent of Europe, it might appear that the post-war demand for imports of these agricultural products would be less in the post-war than in the pre-war period. Whether this is true will depend upon the effects of the war economy upon consuming habits of the peoples, the efficiency of production methods, and the production capacity of the soil. It will also depend upon international economic security and governmental policy - whether governments under the economic conditions then existing deem it better to follow a policy of self-sufficiency or one of international cooperation.

The decline of livestock production in the Netherlands and Denmark and the efforts of Germany to increase the production of livestock in Eastern Europe may change the capacity of Western Europe to produce such commodities as bacon, butter, and eggs, which were formerly exported to Great Britain. But whether the pre-war or present trends of livestock production will obtain in the post-war period may depend on the type of governmental assistance that is rendered to livestock producers in Western and Eastern Europe. The ultimate pattern may be determined by the nature of the post-war import restrictions, customs tariffs, and political boundaries.

The maintenance during the post-war period of increased production in Britain of crops particularly expanded in the war period might tend to curtail the demand for wheat, feedstuffs, and dairy products in comparison with the pre-war period. Whether the British Government will continue to subsidize domestic producers of these products may be the deciding factor in determining wehther producers in North America will be able to export wheat and dairy products to the United Kingdom in volumes comparable to wartime or pre-war exports.

We may study the productive capacity of respective countries with regard to agriculture or industries, and we may become well aware of trends in the capacity of production; yet producers in the United States may be unable to market their export surpluses if the standard of living in other countries is so low that people cannot afford to purchase necessities, if production in other countries is not capable of producing goods that other peoples need, or if barriers obstructing trade obtain in the post-war period.

## Post-War Objectives and the Importance of Production

In the efforts to make agricultural production meet the needs of total war, progress in the direction and stimulation of production has taken place that may spell chaos if governments support their respective agricultural economics without considering their effects on other countries. Readjustment of agriculture after this war, as after past wars, will be necessary. Shall we, as after the first World War, endeavor to return to the economy of the pre-war period? Can we take the risk of returning to a period of trade barriers and antagonistic production policies?

The dangers of social repercussions resulting from economic maladjustment of production in the post-war period are tremendous. If the full productive capacity is utilized, without planning to meet the actual needs, large surpluses may be expected to pile up that may again cause prices to collapse under the pressure. If production, on the other hand, is cramped into pre-war consumption patterns, unrest will inevitably arise from unemployment and low standards of living in the cities and on the farms. Social objectives of agricultural as well as industrial labor have been changing. It is being widely argued that a return to the production pattern of the pre-war period will be unthinkable as well as impossible.

Production of primary raw materials, including foodstuffs, which has been directed by foreign governments for war purposes can be changed to obtain the quantities and types of commodities necessary to meet a minimum standard of human welfare. Return to standards of the pre-war period, when much of the world was underfed, underclothed, and underhoused - yet producers of such essential agricultural products as wheat and cotton could not dispose of their products at a remunerative price - would penalize producers as well as consumers by keeping down the standard of living generally below that made necessary by inherent productive-capacity limitations.

With the experience that governments over much of the world are acquiring in the establishment of production objectives to meet national needs and with the experience in assisting private producers to make necessary shifts in production to meet the objectives, it would appear worth while to attempt the utilization of this wartime experience to facilitate the adjustment of production in the post-war period. A post-war production pattern could be worked out, not on the basis of pre-war consumption and limitation of production, but upon the basis of post-war consumption needs, which will admit of the utilization of the full productive capacity of all nations. Fortunately, it is not necessary that a superstate be set up to regulate agriculture throughout the world, for adequate machinery is largely already in existence. It is essential, however, that governments orient their existing controls toward the achievement of a common goal, namely, the utilization of productive capacity to meet first the nutritional needs of all classes of people.

As succinctly stated by Secretary Wickard, food will win the war and write the peace.[17] The attainment of these two objectives in the opinion of the Secretary is not only possible but is to be reached by one and the same battle. The strategy contemplates wartime production of food in the United States and other free countries to meet the wartime needs of fighting men and civilians for a democratic victory. It contemplates a world production for the post-war period adequate to meet the nutritional needs of all peoples.

In discussions of the post-war objective of production to meet essential human needs now being advocated in democratic nations, reference is usually made to nutritional requirements, housing and clothing needs, conditions of labor, and social security. While it is well and good, in fact necessary, first of all to define our objectives, attention must next be given to the means of fulfilling those objectives if we are to have any hope of reaching them. After we have defined our post-war goals, the very practical problems must be faced of reorienting production to meet the needs, of precluding duplication of production, and of removing obstacles to the distribution of the fruits of production.

One of the first requisites for satisfying human needs is the production of the goods required to meet those needs. A nation that purchases or exchanges goods must produce commodities or perform services of which other nations are in need. Since a nation's ability to consume is limited by its capacity to produce, it should be emphasized that the consumption of goods and their international exchange cannot take place on a stable and international basis with large parts of the world population precluded either by international unrest or by local conditions from producing commodities needed by other peoples.

"The great problem we face when the war ends is to move from a system of full employment for defense to a system of full employment for peace, without going through a low-employment slump."[18] This problem may be solved if plans are made to employ agriculture as well as industry in the production of a sufficient quantity of consumer goods to meet consumer needs and to assure to agricultural producers and laborers returns from their labor that are commensurate with the prices which they must pay for consumer goods.

It may be expected that trained agricultural workers who have enjoyed wage increases during the war will require after the war a higher standard of living than that available prior to the war. "It is no use leading the agricultural laborer up the garden path," declared R. S. Hudson, British Minister of Agriculture, "by letting him think he can have £3 a week during the war and then revert, perhaps, to 35s. or unemployment."[19] Increased wages to workers means increased prosperity and increased consumption capacity on the part of workers. Extending this principle to international trade, Mr. Hudson added that prosperity of the agricultural producing countries in the post-war period would be essential if they were to buy British manufactured goods.[19]

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[17] WICKARD, CLAUDE R. THE SOUTH AND FOOD FOR FREEDOM. Cong. Rec. 87: A4742-A4743. 1941. (Speech delivered at Memphis, Sept. 29, 1941.)

[18] NATIONAL RESOURCES PLANNING BOARD. AFTER DEFENSE - WHAT? 19 pp., illus. Washington, D. C. 1941.

HITCHCOCK, DAL. POST-WAR PLANNING. Paper presented at 22d Ann. Conv. Amer. Trade Assoc. Exec., Hershey, Pa., 1941. [U. S. Bur. Labor Statis. Mim., 11 pp.]

In planning for higher standards of living for labor and agricultural producers, fortunately neither the Government of the United Kingdom nor that of the United States intends to delay action until the period when unemployment and the agricultural slump have become realities. C. R. Attlee, Deputy Prime Minister of the Privy Seal, addressing the International Labor Conference, said:[20]

> We agree with the view recently expressed by Mr. Sumner Welles that planning for the post-war period cannot be left until the end of the war, and we in the United Kingdom are therefore considering our plans now. We are determined that economic questions and questions of universal improvement of the standards of living and nutrition shall not be neglected as they were after the last war owing to preoccupation with political problems.
>
> * * * Plans must be prepared for meeting the immediate post-war needs of Europe and, having regard to the vastness of the problem, international co-operation will clearly be essential to bring these plans to fruition.

### Production and International Organization

The following are believed to be requisites for the security of agricultural producers: (1) Adjustment of production to meet the recognized human needs of all classes of people in order that producers may utilize and expand their productive capacity, (2) maintenance of an adequate supply of primary raw materials at all times to meet primary consumer needs, (3) access of all nations to the export surpluses of primary raw materials on terms of equality, (4) maintenance of stable and equitable international prices for commodities in order that producers may receive prices adequate to assure production to meet consumer needs, (5) assurance to producers of a domestic and international market for certain quantities of their products in order that they may plan their production with safety and that loans may be advanced to them with security.

In order to stimulate discussion with respect to a tangible program that would permit the utilization of agricultural production capacity to meet post-war objectives of an increasingly higher standard of living, the following specific action is suggested. The first step might be to establish international consumer reserves of certain primary raw materials, including agricultural commodities, that will serve as a buffer to protect producers and as a source of supply to consumers. The second step would then be to set up an international administrative committee for each commodity, representative of producer and consumer interests. Production in any system being dependent upon living standards, the third necessary step would be to ascertain as nearly as possible what consumption requirements of respective countries will be in the post-war period. It would be the function of the respective committees to (1) determine a commodity price that would be adequate to encourage production to meet demand, and (2) administer import quotas that have been ascertained and accepted by governments of consuming nations to be essential to meet their consumption requirements.

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[19] Speech in the House of Commons, November 19, 1941.

[20] As reported in I. L. O. CONFERENCE - MR. ATTLEE ON POST-WAR PROBLEMS. Manchester Guardian 29671: 6. Oct. 30, 1941.
See also, WICKARD, CLAUDE R. POST-DEFENSE PLANNING. U. S. Dept. Agr., Off. of Sec. Mem. 913, Sup. 1, 8 pp., illus. Sept. 17, 1941. [Mimeographed.]

It is recognized there are a number of different types of international organizations that might be devised to serve as the basis for international security and the free exchange of goods, but no scheme can ignore the advancements that have been made in production and the will for a higher standard of living. Whether an arrangement is worked out through informal understandings or is embodied in some kind of formal federation, it is believed that consideration must be given to certain economic facts and principles and to certain social trends that seem to persist in spite of the forms governments may take. The increasing productive capacity of agriculture as well as industry is a factual condition that necessitates the absorption of goods in order that persons who labor may utilize their capacity to produce and may receive just returns for their production. To ignore this condition in the final settlement at the end of this war is to invite artificial measures that will preclude the establishment of a stable peace.

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# FOOD CONSUMPTION IN THE UNITED KINGDOM . . . .

By J. H. Richter*

*There has been some amelioration in the British food situation during 1941. As in Germany, the total energy value of war-time food consumption is about 90 percent of the pre-war level, possibly slightly above. For industrial and agricultural workers it is probably higher and for the population in nonmanual work it is lower. Despite a considerable reduction in sugar, the supply of carbohydrates is comparatively large. The proportions of fats and animal proteins in the British diet are considerably reduced and those of vitamins and mineral salts somewhat reduced. The British system, unlike the German, does not allow larger rations to heavy workers, night workers, and others in strenuous manual occupations. The higher physiological requirements of these laborers, however, are being taken care of by the extension of the system of factory canteens, where millions of workers receive one full meal a day. These meals are becoming a substantial addition to the worker family's ordinary ration.*

The food situation in the United Kingdom since the spring of 1941 appears to have improved moderately. As it depends to a large extent upon shipping conditions, the improvement is a direct result of larger arrivals of overseas foodstuffs, including shipments from the United States under the provisions of the lease-lend legislation.

Table 1 gives the weekly rations in effect since the inception of the rationing scheme on January 8, 1940. The combined ration of butter, margarine, and cooking fats of 8 ounces per person per week remained unchanged for 17 months from July 22, 1940, to November 17, 1941, when it was raised to 10 ounces. The meat ration, on the other hand, was gradually reduced to 1 shilling's worth on March 31, 1941. From this low point the value of the allowance was put back to 1s. 2d. on July 8 and has since remained unchanged. It may be estimated that this ration at present prices should average about 17 ounces. Children receive half the ration. Bacon and ham, combined, have remained at the 4-ounce allowance (for uncooked) since June 10, 1940.

The weekly sugar ration of 8 ounces per person was maintained at this level from May 27, 1940, to November 17, 1941, when it was raised to 12 ounces. Jam, marmalade, sirup, and treacle as a group were rationed from March 17, 1941, at 8 ounces per month. The tea ration has remained unchanged since July 9, 1940, at 2 ounces per week.

Cheese was rationed at 1 ounce per person per week on May 5, 1941, but was raised to 2 ounces on June 30 and to 3 ounces on August 25. Certain categories of heavy workers and vegetarians get an allowance of 8 ounces. Eggs are rationed on the basis of customer lists, and the allowance in the second half of 1941 was reduced to 2 or 3 eggs per person per month. Supplies of fish are much below those of pre-war days, though this food is not rationed.

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* Office of Foreign Agricultural Relations. The principles of rationing and the system as adopted in the United Kingdom was outlined in the January 1941 issue of Foreign Agriculture.

TABLE 1.–*Rationed foods, weekly rations, and ration periods in the United Kingdom, 1940-41*[1]

| RATION PERIOD | BACON AND HAM COMBINED (UNCOOKED WITH BONE) | BUTTER | FRESH MEAT[2] | | | SUGAR | TEA | CREAM | BUTTER, MARGARINE, AND COOKING FATS COMBINED | CHEESE | JAM, MARMALADE, SIRUP, AND TREACLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | BEEF, VEAL, LAMB, MUTTON | PORK | OFFALS | | | | | | |
| 1940 | *Ounce* | *Ounce* | *s.d.*[3] | *s.d.*[3] | *s.d.*[3] | *Ounce* | *Ounce* | *Ounce* | *Ounce* | *Ounce* | *Ounce* |
| Jan. 8 - 28 | 4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Jan. 29 - June 9 | 8 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Mar. 11 - Apr. 8 | ...... | ...... | 1/10 | (4) | free | ...... | ...... | ...... | ...... | ...... | ...... |
| Jan. 8 - Mar. 24 | ...... | 4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Mar. 25 - June 3 | ...... | 8 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| Apr. 9 - Sept. 30 | ...... | ...... | 1/10 | free | free | ...... | ...... | ...... | ...... | ...... | ...... |
| Jan. 8 - May 26 | ...... | ...... | ...... | ...... | ...... | 12 | ...... | ...... | ...... | ...... | ...... |
| May 27 - Nov. 16, 1941 | ...... | ...... | ...... | ...... | ...... | 8 | ...... | ...... | ...... | ...... | ...... |
| June 3 - July 21 | ...... | [5] 4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| From June 10 | 4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| From July 9 | ...... | ...... | ...... | ...... | ...... | ...... | 2 | ...... | ...... | ...... | ...... |
| July 22 - Nov. 16, 1941 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | [6] 8 | ...... | ...... |
| Sept. 30 - Dec. 15 | ...... | ...... | 2/2 | free | free | ...... | ...... | ...... | ...... | ...... | ...... |
| From Oct. 1 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | (7) | ...... | ...... | ...... |
| Dec. 16 - Jan. 5, 1941 | ...... | ...... | 1/10 | free | free | ...... | ...... | ...... | ...... | ...... | ...... |
| 1941 | | | | | | | | | | | |
| Jan. 6 - 8 | ...... | ...... | 1/6 | (4) | (4) | ...... | ...... | ...... | ...... | ...... | ...... |
| Jan. 9 - Mar. 30 | ...... | ...... | 1/2 | (4) | (4) | ...... | ...... | ...... | ...... | ...... | ...... |
| From Mar. 17 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | [8] 1.9 |
| Mar. 31 - July 7 | ...... | ...... | 1/0 | (4) | (4) | ...... | ...... | ...... | ...... | ...... | ...... |
| From July 8 | ...... | ...... | [9] 1/2 | (4) | (4) | ...... | ...... | ...... | ...... | ...... | ...... |
| May 5 - June 29 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | [10] 1 | ...... |
| June 30 - Aug. 24 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | [10] 2 | ...... |
| From Aug. 25 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | [10] 3 | ...... |
| From Nov. 17 | ...... | ...... | ...... | ...... | ...... | 12 | ...... | ...... | 10 | ...... | ...... |

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[1] Children entitled to same rations as adults, except for meat, of which children up to 6 years get half the ration.

[2] Proportion of bone about 20 percent. Pork and offals are included in the meat ration after January 5, 1941.

[3] Rationed by value in shillings and pence.

[4] Included in beef, veal, lamb, and mutton ration.

[5] As from July 22, 1940, butter was placed under a joint butter-margarine ration.

[6] Margarine and cooking fats were not rationed prior to July 22, 1940

[7] Sale prohibited.

[8] 8 ounces per month.

[9] Ration, on an average, buying about 17 ounces.

[10] Special ration of 8 ounces per week for vegetarians, agricultural workers, underground miners, county roadmen, forestry workers, land-drainage workers, the Auxiliary Force of the Women's Land Army, certain types of agricultural industry workers, certain types of railway men and canal-navigation-maintenance men.

Consumption of fresh milk, which was maintained at high levels well into 1941, has recently been reduced considerably for nonpriority consumers. Priority is reserved for children, mothers, invalids, and hospital patients. Allowances for these preferred groups are reported to be 1 pint daily for expectant and nursing mothers and children up to 6 years; one-half pint daily for children from 6 to 17 years; and 2 pints for invalids on medical certificates. These allowances are provided free or at reduced prices to the needy, as are also the allowances under the milk-in-schools scheme. Only such supplies of fresh milk as remain after these priority rations have been met are available for ordinary adult consumers and other nonpriority requirements. The entire milk output is to be used as fresh milk, with none used in the manufacture of butter or cheese, so long as the demand for liquid milk is unsatisfied.

While fruit supplies continue greatly below accustomed standards, larger domestic production of potatoes and other vegetables appears to permit consumption at a rate above pre-war levels. Bread of good quality remains unrationed and is being consumed in quantities considerably above pre-war levels. The consumption of oatmeal has also increased.

A factor of considerable significance is the extension during 1941 of the system of factory canteens. Millions of workers now receive one full meal a day in canteens, British restaurants, and other establishments. These meals are a measurable addition to the ordinary ration allowances. Another scheme of additional food distribution went into effect in December and provides for the allowance for 4-week periods - possibly at intervals - of from 1 to 2 pounds per head of canned meat, fish, and beans. This system will be known as the "points rationing system," since it is based on an overall allowance of a number of "points" (16 for the first 4 weeks) per person. Within this allowance the consumer has free choice to buy any type or quality of such canned foods of varying "point" values as may be available under the scheme. These allotments may conceivably develop into a substantial supplement to the restricted wartime diet of the British people but will depend on the possibility of obtaining and shipping such foods from abroad.

## COMPARISONS WITH PRE-WAR CONSUMPTION

In an appraisal of the wartime restrictions that have been imposed upon consumption, several points must be taken into consideration. Unlike the German system, British food rationing does not, as a rule, differentiate as among the various classes of consumers. Children's rations are the same as those for adults, except for meat, of which children up to 6 years of age are allowed half the adult ration. Heavy workers get a larger ration only of cheese. On the other hand, the higher physiological requirements of laborers in heavy manual work are now being taken account of by the provision of meals in factory canteens. This extra allowance does not show up in the general level of food rations. Rations for the armed forces are ample and make provision for a well-balanced diet.

Wartime food consumption by the civilian population may be compared with pre-war consumption as calculated from total national averages and from household budgets. Total national averages are available from domestic production and foreign-trade statistics. Household-budget data were provided from an official inquiry of the Ministry of Labour,[1] giving a sample of 8,905 worker households and from an investigation made by the staff of the Rowett Institute in cooperation with the Market Supply Committee,

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[1] [GREAT BRITAIN] MINISTRY OF LABOUR. WEEKLY EXPENDITURE OF WORKING - CLASS HOUSEHOLDS IN THE UNITED KINGDOM IN 1937-38. [Gt. Brit] Min. Labour Gaz. 48: 300-305. 1940.

TABLE 2.-*Weekly food consumption and rations in the United Kingdom, per family,*[1] *with comparisons*

| FOODSTUFFS | PRE-WAR CONSUMPTION | | | | WARTIME RATIONS AND COMPARISONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | NATIONAL AVERAGE (2) | 1,152 FAMILY BUDGETS[3] | | 8.905 WORKERS' BUDGETS 1937-38 (6) | BRITISH RATIONS 1941 (7) | GERMAN RATIONS 1941 (8) | BRITISH RATIONS AS PERCENTAGE OF GERMAN RATIONS | BRITISH RATIONS AS PERCENTAGE OF PRE-WAR CONSUMPTION | | GERMAN RATIONS AS PERCENTAGE OF PRE-WAR CONSUMPTION[10] | |
| | | UNADJUSTED (4) | ADJUSTED (5) | | | | | WORKER HOUSEHOLDS[9] | CIVILIAN AVERAGE (9) | WORKER HOUSEHOLDS[9] | CIVILIAN AVERAGE (9) |
| | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Bread, flour, and cereals in terms of flour | 14.4 | 14.2 | 15.6 | 14.8 | [11] 17.8 | [12] 14.3<br>[13] 16.6 | 124<br>107 | 120 | 120 | 110 | 100 |
| Sugar purchased as such | ..... | 4.2 | 4.2 | 4.8 | 1.9 | 1.9-2.5 | ..... | ....... | ....... | ....... | ....... |
| Jams, jellies, sirup, etc. | ..... | 1.3 | 1.2 | 1.0 | 0.5 | 1.3 | ..... | ....... | ....... | ....... | ....... |
| Sugar consumed in other forms | ..... | ...... | 2.1 | [9] 1.8 | 0.7 | [9] 1.0 | ..... | ....... | ....... | ....... | ....... |
| Total in terms of sugar[14] | 6.5 | ...... | 6.8 | 7.0 | 2.8 | 3.4-4.0 | 70-82 | 40 | 40 | 105 | 105 |
| Potatoes | 15.1 | 11.9 | 13.2 | 13.8 | [11] 15.0 | [11] [15] 37.0 | 41 | 110 | 113 | [14] 130 | [14] 125 |
| Meats, including bacon and ham | [16] 10.4 | 5.8 | [17] 9.0 | 6.1 | 4.74 | [12] 3.1<br>[13] 4.0 | 153<br>119 | 78 | 60-70 | 70 | 67 |
| Fats and oils | 3.0 | 3.2 | 3.3 | 3.0 | 1.9 | [12] 2.1<br>[13] 2.4 | 90<br>79 | 63 | 63 | 75 | 70 |
| Cheese | 0.75 | 0.61 | 0.71 | 0.7 | [12] 0.7<br>[13] 1.0 | 0.5 | 140<br>200 | 100<br>143 | 110 | 80 | 70 |
| Eggs | 10.9 | 14.7 | 10.9 | 14.1 | [11] 3-4 | [18] 5.5 | 54-73 | [19] 30 | 33 | 70 | 65 |
| Tea | 0.66 | 0.59 | 0.66 | 0.7 | 0.47 | ....... | ..... | 67 | 70 | ....... | ....... |

[1] 3.77 persons as in worker-household-budget inquiry published in Ministry of Labour Gazette (London), December 1940. Age distribution was 0.99 child under 14 years; 0.15 male 14 to 17 years inclusive; 0.16 female 14 to 17 years inclusive; and 2.47 adults 18 years and over. For purposes of ration calculation (United Kingdom: meat; Germany: bread, meat, fats) it was assumed that the age distribution of the children under 14 years was in accordance with the British population average: 0.24 child under 3 years, 0.20 child 3 to 5, inclusive, 0.27 child 6 to 9, inclusive, and 0.28 child 10 to 13, inclusive. For proper interpretation of this table, see comment in text.

[2] 1934, as per Sir John Orr's Food, Health and Income, second edition, London, 1937; tables pp. 72 and 73. These figures represent total estimated national consumption reduced to a per capita basis. There are a number of points of difference between the estimated national supply and the quantities consumed in family households. For comment see text.

[3] According to an investigation made by the staff of the Rowett Institute in cooperation with the Market Supply Committee. The results of this study are given in Sir John Orr's Food, Health and Income, second edition, London, 1937. The tables on pp. 72 and 73 of that publication were converted into a 3.77-person-family basis, to make them directly comparable with the workers-budget data. The data on food consumption in 1,152 families obtained by this inquiry had previously been given and published in E. M. H. Lloyd's paper Food Supplies and Consumption at Different Income Levels, read at the December 1935 conference of the Agricultural Economics Society (Journal of the Proceedings of the Agricultural Economics Society, No. 2, April 1936), where Mr. Lloyd referred to the inquiry into food consumption at different income levels as carried out "by members of the staff of the Market Supply Committee" under his direction.

[4] Returns of 1,152 family budgets out of a total of 2,640 collected; group results weighted by relative importance of income and expenditure groups in total population.

[5] These are the figures finally adopted by Sir John Orr, as distinguished from the actual budget data given in the preceding column. Most of the differences between the two sets of figures are due to adjustments made, notably in the budget data for the higher income groups, to make them reasonable approximations of the national averages (given in the first column). See also footnote 2.

[6] As per Weekly Expenditure of Working-Class Households in the United Kingdom in 1937-1938, in Ministry of Labour Gazette December 1940.

[7] As in force over most of the year. Cheese ration basis, 3 ounces per week as from August 25, 1941. Meat, rationed by value, assumed to average, in worker households, 17 ounces per ration of 1s. 2d. According to Ministry of Labour Gazette, December 1940, worker households in 1937-38 spent 4s. 8½d. per week on meat, which bought 4.7 pounds, giving an average price of about 1s. per pound. Meat prices in 1941 averaged 10 to 15 percent above 1937-38.

[8] As in force over most of the year. Meat ration on the reduced basis as in effect since June 2, 1941.

[9] Rough calculation.

[10] See also Food Rationing in Germany, in Foreign Agriculture, October 1941.

[11] Unrationed. Figure indicates roughly estimated consumption.

[12] Family of "normal consumers."

[13] One male "heavy worker;" other adults, "normal consumers."

[14] Sugar content of jams, jellies, etc., taken at 40 percent.

[15] In the light of more recent information the estimated increase in wartime consumption over pre-war was placed at 30 percent for worker families and at 25 percent for the civilian average, compared with only 20 and 15 percent estimated in the October 1941 issue of Foreign Agriculture.

[16] Probably too high - perhaps by as much as 10 or 20 percent.

[17] Probably too high - a figure near 8 pounds seems a more realistic estimate.

[18] Rationed on the basis of customer lists. The figure is a rough estimate of consumption.

[19] Based on "national average" and budget data giving a more conservative estimate of wartime decline in consumption.

giving figures for 1,152 households at different income levels, published by Sir John Orr[2] and E. M. H. Lloyd.[3]

Large unexplained differences in the pre-war consumption figures as among these three sources were found only for meat[4] and eggs and minor unexplained differences for fish, cheese, and sugar. The explainable differences between "national averages" and the household-budget data are due to a number of factors. Certain discrepancies must be expected "owing to the relatively small number of budgets available."[5] Other discrepancies are due to the fact that worker households consume less or more of some foods than do other social groups or than does the average of the population.[6] Furthermore, national averages include wastage and loss of weight in distribution and processing, etc., while budget data give weights of food as purchased in the shop. National averages also include food consumed in restaurants.

Table 2 gives a comparison of the food rations in force over most of 1941 with pre-war consumption - both "national averages" and household-budget returns. The averages of the 1,152 family budgets analyzed should be more nearly comparable with the "national averages" than the worker-budget data, since they were picked to give a sample of all income and food-expenditure groups. These data were furthermore weighted by the distribution of the population by income classes. The adjusted figures for these estimates of total consumption based upon family budgets were obtained by a process of selective and reasoned adjustment to bring the results into harmony with the estimates of total national consumption ("national averages").[2] [3]

In the light of these qualifications and after consideration of the quantitative and qualitative information available, it appears that average civilian rations over most of 1941 allowed of a consumption at between 60 and 70 percent of pre-war levels for meats (including bacon and ham), at a little over 60 percent for fats, at 40 percent for sugar, and only about 33 percent for eggs. Consumption of fish and fruit is also considerably curtailed. On the other hand, 1941 consumption of bread, potatoes, and vegetables probably ranged from 10 to 20 percent above pre-war levels and fresh milk only slightly below pre-war.

As a result of the additional allowances of food to heavy workers and others in the form of a full meal per day in factory canteens, British restaurants, and other establishments, the indicated percentage reductions somewhat overstate the curtailment in wartime food consumption. It may be estimated that on a total calorie basis the meals served outside the home, and therefore off the ration, may add from 5 to 10 percent to the civilian average consumption of all foods taken together, or from 2 to 20 percent to the consumption of any one foodstuff. The comparison with German rations, given in table 2, for these and other reasons is therefore subject to a number of qualifications.[7]

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[2] Orr, John Boyd. FOOD HEALTH AND INCOME; REPORT ON A SURVEY OF ADEQUACY OF DIET IN RELATION TO INCOME. Ed. 2, 83 pp., illus. London. 1937.

[3] Lloyd, E. M. H. FOOD SUPPLIES AND CONSUMPTION AT DIFFERENT INCOME LEVELS. Agr. Econ. Soc. Proc. 4: 89-110, illus. 1936.

[4] Similarly a considerable difference is found in a comparison of meat-consumption data for Germany as given by "national averages" and worker-household budgets. After due allowance is made for wastage in distribution and higher meat consumption by other social groups, the "inexplicable residual" of the difference in the data for the United Kingdom appears to be larger than in those for Germany. In a typical worker family in the United Kingdom meat consumption as per household budgets was placed at only about 60 percent of the gross "national average" and in Germany at about 75 percent. These percentages are, of course, raised if allowance is made in the "national averages" for wastage in distribution and for higher meat consumption by other social groups. Since both these factors seem to have greater weight in the United Kingdom than in Germany, adjusted differences would not show as wide a margin between the United Kingdom and Germany as is indicated by the unadjusted percentages of 60 and 75.

[5] This comment relates to the 1,152 family budgets previously mentioned.

[6] This applies to the Ministry of Labour data.

## CONSUMPTION AT DIFFERENT INCOME LEVELS

Comparison of the food rations with the Ministry of Labour's data on pre-war consumption in worker households, also given in table 2, indicates that the wartime restrictions for the average worker family are less than for the population as a whole. This of course is due to the fact that pre-war consumption in worker households was less than in other social groups whereas rations are largely uniform, or even in some respects favor manual workers.

The household budgets analysed by the Rowett Institute and the Market Supply Committee also permit of some conclusions as to the incidence of the rations upon consumption at different income levels. Almost without exception, Sir John Orr's data by income groups clearly indicate that, since pre-war consumption of all rationed items rose with rising income, rationing means considerably greater restriction in the higher income brackets than in the lower. However, even in the very lowest groups 1941 rations, on the whole, have meant a reduction.

Table 3 compares 1941 rations with the pre-war household data by income and food-expenditure groups. The reduction in food consumption that the rations imply rises from the lowest two to the highest two groups from 15 to 60 percent for meat; from 30 to 50 percent for fats; from 50 to 60 percent for sugar; and from 40 to 80 percent for eggs. Rations of cheese are above pre-war consumption in the lower income groups.

These results are in accordance with what must be expected under largely uniform rations and the given pre-war distribution of food consumption by income groups. They do not mean that the social inequalities in nutritional standards have been entirely eliminated. Some people cannot buy their full rations. There are still ways and means by which the well-to-do can add to their diet, and a number of fancy foods, not within the reach of the common man's purse, still appear to be on the market. Yet it is true that throughout 1941 conditions have steadily moved toward a more equitable and socially more desirable food distribution. The subsidies paid by the British Government to keep down the prices of bread, meat, milk, and bacon have been raised from 60 million pounds sterling (summer, 1940) to over 100 million pounds. The system of factory canteens has been extended. Distribution of fresh milk to children and to mothers - to the needy free or at reduced prices - has been continued, even though declining production has necessitated a considerable curtailment in the fresh-milk allowances to ordinary adult consumers.

## TOTAL CONSUMPTION

On the basis of a computation of the distribution by groups of foodstuffs of total food values consumed in pre-war years, given by Sir John Orr, it appears

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[7] RICHTER, J. H. RATIONING IN THE UNITED KINGDOM. Foreign Agr. 5: 13-24. 1941. See pp. 18-19.

TABLE 3.—*Weekly rations in the United Kingdom compared*

| ITEM | GROUP I[2] | | | GROUP II[3] | | | GROUP III[4] | | |
|---|---|---|---|---|---|---|---|---|---|
| | PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION | PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION | PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION |
| | *Pound* | *Pound* | *Percent* | *Pound* | *Pound* | *Percent* | *Pound* | *Pound* | *Percent* |
| Bread, flour, and cereals in terms of flour | 15.6 | - | -- | 16.0 | - | - | 15.0 | - | -- |
| Sugar purchased as such | 3.2 | 1.9 | 59 | 3.8 | 1.9 | 50 | 4.2 | 1.9 | 45 |
| Jams, jellies, sirups, etc. | 1.0 | 0.5 | 50 | 1.2 | 0.5 | 42 | 1.2 | 0.5 | 42 |
| Sugar consumed in other forms | 1.6 | [9] 0.5 | 31 | 1.8 | [9] 0.6 | 33 | 2.0 | [9] 0.7 | 35 |
| Total in terms of sugar | 5.2 | 2.6 | 50 | 6.1 | 2.7 | 44 | 6.7 | 2.8 | 42 |
| Potatoes | 12.5 | - | - | 13.2 | - | - | 13.4 | - | - |
| Meats, including bacon and ham: | | | | | | | | | |
| Series 1[10] | 5.4 | 4.74 | 88 | 7.4 | 4.74 | 64 | 8.7 | 4.74 | 54 |
| Series 2[11] | 4.5 | 4.74 | 105 | 6.0 | 4.74 | 79 | 7.0 | 4.74 | 68 |
| Fats and oils | 2.4 | 1.9 | 79 | 3.1 | 1.9 | 61 | 3.4 | 1.9 | 56 |
| Cheese | 0.4 | 0.7 | 175 | 0.6 | 0.7 | 117 | 0.7 | 0.7 | 100 |
| Eggs | 5.7 | 3-4 | 53-70 | 7.9 | 3-4 | 38-50 | 9.8 | 3-4 | 31-41 |
| Tea | 0.5 | 0.5 | 100 | 0.6 | 0.5 | 83 | 0.7 | 0.5 | 71 |

admissible to estimate roughly total wartime food consumption in percentage of the pre-war standard. Such an estimate is made in table 4, for the representative part of the year 1941. It is based upon the foregoing analysis of 1941 consumption of individual foodstuffs in percentage of pre-war consumption. The calculations seem to indicate that the total calorie value of 1941 food consumption in the United Kingdom for the average civilian was about 90 percent of the pre-war standard, possibly slightly above. For industrial and agricultural workers it was probably somewhat higher and for the rest of the population, lower.

The supply of carbohydrates, despite a considerable reduction in sugar, was comparatively large; the proportions of fats and animal proteins were appreciably reduced; and those of vitamins and mineral salts somewhat reduced. It is realized by the British food authorities that the supply of vitamins should be increased. They are beginning to give the people a choice of bread of 85-percent extraction or the customary white bread fortified with vitamin $B_1$. Margarine, by the addition of vitamins A and D, has been made biologically about equivalent to butter. A scheme is now being organized for the free distribution of black currant sirup and puree - later possibly also orange juice - as well as cod-liver oil to all children born after January 1, 1940. This scheme is experimental, and the results are to be reviewed after a few months.

*with pre-war food consumption, by income groups*[1]

| GROUP IV[5] | | | GROUP V[6] | | | GROUP VI[7] | | | AVERAGE OF ALL GROUPS[8] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION | PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION | PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION | PRE-WAR CONSUMPTION | RATIONS | RATIONS AS PERCENT OF CONSUMPTION |
| *Pound* | *Pound* | *Percent* | *Pound* | *Pound* | *Percent* | *Pound* | *Pound* | *Percent* | *Pound* | *Pound* | *Percent* |
| 15.8 | - | - | 15.3 | - | - | 14.1 | - | - | 15.6 | - | - |
| 4.5 | 1.9 | 42 | 4.6 | 1.9 | 41 | 4.6 | 1.9 | 41 | 4.2 | 1.9 | 45 |
| 1.3 | 0.5 | 38 | 1.4 | 0.5 | 36 | 1.3 | 0.5 | 38 | 1.2 | 0.5 | 42 |
| 2.2 | [9] 0.8 | 36 | 2.5 | [9] 0.9 | 36 | 2.7 | [9] 1.0 | 37 | 2.1 | [9] 0.7 | 33 |
| 7.2 | 2.9 | 40 | 7.6 | 3.0 | 39 | 7.8 | 3.1 | 40 | 6.8 | 2.8 | 41 |
| 13.4 | - | - | 13.4 | - | - | 12.7 | - | - | 13.2 | - | - |
| 9.8 | 4.74 | 48 | 10.6 | 4.74 | 45 | 11.6 | 4.74 | 41 | 9.0 | 4.74 | 53 |
| 8.0 | 4.74 | 59 | 11.0 | 4.74 | 43 | 13.0 | 4.74 | 36 | 8.1 | 4.74 | 58 |
| 3.5 | 1.9 | 54 | 3.6 | 1.9 | 53 | 3.7 | 1.9 | 51 | 3.3 | 1.9 | 58 |
| 0.8 | 0.7 | 88 | 0.9 | 0.7 | 78 | 0.6 | 0.7 | 117 | 0.7 | 0.7 | 100 |
| 12.1 | 3-4 | 25-33 | 13.6 | 3-4 | 22-29 | 17.0 | 3-4 | 18-24 | 10.9 | 3-4 | 30-37 |
| 0.7 | 0.5 | 71 | 0.7 | 0.5 | 71 | 0.6 | 0.5 | 83 | 0.7 | 0.5 | 71 |

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[1] Calculated for families of 3.77 persons, constituted as per Ministry of Labour inquiry into worker households budgets, 1937-38. See also footnote 1 to table 2. Rations for the representative part of 1941 as per official data. Pre-war consumption by income groups according to the investigation made by the Rowett Institute and the Market Supply Committee mentioned in footnote 3 to table 2. The adjusted per capita figures which that study finally adopted were converted into data per 3.77-person family.

[2] 10 percent of population; with average pre-war weekly expenditure on food of 4 shillings per person.

[3] 20 percent of population; with average pre-war weekly expenditure on food of 6 shillings per person.

[4] 20 percent of population; with average pre-war weekly expenditure on food of 8 shillings per person.

[5] 20 percent of population; with average pre-war weekly expenditure on food of 10 shillings per person.

[6] 20 percent of population; with average pre-war weekly expenditure on food of 12 shillings per person.

[7] 10 percent of population; with average pre-war weekly expenditure on food of 14 shillings per person.

[8] Total population; average pre-war weekly food expenditure of 9 shillings per person.

[9] Estimated in Office of Foreign Agricultural Relations.

[10] Seems too high for pre-war consumption.

[11] This more conservative series on pre-war consumption was estimated in the Office of Foreign Agricultural Relations in the light of the budget data meanwhile obtained by the Ministry of Labour from 8,905 worker households (Ministry of Labour Gazette, December 1940).

TABLE 4.–*Composition of food diet and energy value of wartime food consumption, per capita, in the United Kingdom, compared with that of the pre-war period*

| FOODSTUFF | PRE-WAR CONSUMPTION, (1934) BY FOOD CLASSES AS PERCENTAOE OF TOTAL[1] | | | | 1941 CIVILIAN CONSUMPTION[2] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | AS PERCENTAGE OF PRE-WAR CONSUMPTION | INDEX OF ABSOLUTE QUANTITIES CONSUMED[3] | | | | PERCENTAGE OF TOTAL CONSUMPTION BY FOOD CLASSES | | | |
| | PROTEINS | FATS | CARBOHYDRATES | CALORIES | | PROTEINS | FATS | CARBOHYDRATES | CALORIES | PROTEINS | FATS | CARBOHYDRATES | CALORIES |
| | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Meat | 27.1 | 42.1 | ...... | 18.0 | [4] 60-70 | 16.3-19.0 | 25.3-29.5 | ...... | 10.8-12.6 | 18.9-21.4 | 37.3-41.0 | ...... | 13.0-15.0 |
| Poultry and eggs | 4.7 | 2.5 | ...... | 1.4 | 33 | 1.6 | 0.8 | ...... | 0.5 | 1.9-1.8 | 1.2-1.1 | ...... | 0.6 |
| Fish | 6.7 | 0.9 | ...... | 1.0 | 50 | 3.4 | 0.5 | ...... | 0.5 | 3.9-3.8 | 0.7 | ...... | 0.6 |
| Dairy produce | 14.8 | 42.0 | 3.9 | 18.6 | [5] 75 | 11.1 | 31.5 | 2.9 | 14.0 | 12.9-12.5 | 46.5-43.7 | 3.2 | 17.0-16.6 |
| Total animal | 53.3 | 87.5 | 3.9 | 39.0 | [6] 66-71 | 32.4-35.1 | 58.1-62.3 | 2.9 | 25.8--27.6 | 37.6-39.5 | 85.7-86.5 | 3.2 | 31.3-32.8 |
| Cereals | 35.1 | 2.4 | 46.8 | 29.8 | 120 | 42.1 | 2.9 | 56.2 | 35.8 | 48.8-47.4 | 4.3-4.0 | 61.6 | 43.4-42.5 |
| Fruit | 1.3 | 1.2 | 5.3 | 3.4 | 50 | 0.6 | 0.6 | 2.6 | 1.7 | 0.7 | 0.9-0.8 | 2.9 | 2.1-2.0 |
| Vegetables | 9.5 | 0.6 | 16.8 | 10.2 | 110 | 10.5 | 0.7 | 18.5 | 11.2 | 12.2-11.8 | 1.0 | 20.3 | 13.6-13.3 |
| Sugar | - | - | 26.9 | 14.4 | 40 | - | - | 10.8 | 5.8 | - | - | 11.8 | 7.0-6.9 |
| Cocoa | 0.7 | 1.7 | 0.3 | 0.8 | 75 | 0.5 | 1.3 | 0.2 | 0.6 | 0.6-0.5 | 1.9-1.8 | 0.2 | 0.7 |
| Margarine | 0.1 | 6.6 | - | 2.4 | 63 | 0.1 | 4.2 | - | 1.5 | 0.1 | 6.2-5.9 | - | 1.9-1.8 |
| Total vegetable | 46.7 | 12.5 | 96.1 | 61.0 | [6] 93 | 53.8 | 9.7 | 88.3 | 56.6 | 62.4-60.5 | 14.3-13.5 | 96.8 | 68.7-67.2 |
| Grand total | 100.0 | 100.0 | 100.0 | 100.0 | [6] 82-84 | [7] 86.2-88.9 | [7] 67.8-72.0 | [7] 91.2 | [7] 82.4-84.2 | 100.0 | 100.0 | 100.0 | 100.0 |
| Estimated addition for meals off the ration[8] | ...... | ...... | ...... | ...... | 4.8 | ...... | ...... | ...... | 4.1-8.4 | ...... | ...... | ...... | ...... |
| Total 1941 per capita consumption | ...... | ...... | ...... | ...... | 86-92 | ...... | ...... | ...... | 86.5-92.6 | ...... | ...... | ...... | ...... |

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[1] According to Sir John Orr's estimates in Food, Health and Income, p. 61.

[2] Estimated by the Office of Foreign Agricultural Relations,

[3] Obtained by multiplying figures in column 6 by those in columns 2, 3, 4, and 5. Excludes meals provided in factory canteens, British restaurants, and other establishments. An estimate of the energy value of the meals thus provided and of total 1941 consumption, in terms of calories, including this item, is given in the last two lines of this column.

[4] This estimate which has been arrived at independently and is based on the data discussed in this article is strongly supported by an analysis made by RUTHERFORD, R. S. G. and M. E. E. THE CONSUMPTION AND RATIONING OF MEAT AND CHEESE. Oxford Econ. Papers, No. 5, pp [73]-87, illus. 1941.

[5] For purposes of calculating a composite percentage for dairy products as a whole it was assumed that 1941 consumption (1) of fresh milk was 95 percent of pre-war; (2) of condensed and dry milk, 50 percent of pre-war; (3) of butter, 65 percent of pre-war; (4) of cheese, 110 percent of pre-war; and (5) of cream, zero. Food values were applied as per PLIMMER, R. H. A. ANALYSES AND ENERGY VALUES OF FOODS. 255 pp. London. 1921.

[6] Weighted on a calorie basis.

[7] Representing wartime consumption in percentage of pre-war figure. But see also footnote 3.

[8] Allowance for meals provided in factory canteens, British restaurants, and other establishments.

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